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ABSTRACT

The document is designed to provide the teacher of the gifted and talented child with an overview and operational procedure to facilitate the use of future-aimed learning activities for developing leadership capabilities in students. Initial sections cover elements of the future-aimed curriculum mode, definitions of terms, and descriptions of process and strategies, such as brainstorming. Section IV includes a discussion of future facts and presents guidelines for conducting two activities in anticipating the future and simulated problem solving for future leaders. Given in Section V are a paper by J. Novotney titled "An Analysis of Leadership Styles" and a sample checklist for students to use in assessing their own leadership capabilities. A final section offers guidelines for program evaluation. Additional resources references, as well as a paper titled "Force Field Technique of Diagnosing a Problem" by C. Jung, sample sheets for future problem solving practice by P. Torrance, and two sample instructional models are also included. (SBH)

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Developing Leaders through Future-Aimed Curriculum

An Instructional Future-Aimed Curriculum Model

U.S.O.E.

Programs for Education of the
Gifted and Talented

Yakima School District No. 7

104 North Fourth Avenue
Yakima, Washington

Grant Number G007604796

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DEVELOPING LEADERS THROUGH A FUTURE-AIMED CURRICULUM

FOUNDATIONAL UNIT

FORWARD

> I firmly believe we have reached a time in history when education must devote an increased amount of time in enlarging, enriching, and imporving students; images of the future. Throughout history, advances in civilization have been guided and spurred by the images of the future of its gifted and talented members.....It will take future-oriented curricula for these gifted and talented students to make this possible.
>
> E. Paul Torrance, 1977

This foundational unit provides the teacher of the gifted and talented child with an overview and operational procedure which should facilitate the instructional utilization of future-aimed learning activities for developing leadership capabilities in gifted and talented students.

A review of the literature indicates that no future-aimed curriculum model has yet been developed for gifted children. Yet, there is widespread agreement that citizens in general need to orient themselves to the rapidity of change which they are likely to encounter in the future. Futurists have indicated that these changes will quite likely require bold and imaginative decisions on the part of tomorrow's national leaders. Limits to various kinds of growth and alternate resources are forseeable and will require different kinds of thinking processes and attitude development. Future leaders have the sobering task of convincing citizens that such changes are necessary for human survival. Thus it can be seen that new leaders will need to possess imaginative and unique skills which often are lacking in present and past leaders. It is hoped that the sample activities described in this foundational unit will develop these attributes in the students who are participating in gifted and talented programs.

Therefore, this unit, coupled with the sample instructional model (Addendum C) should assist the classroom teacher to develop and nurture the futuristic/leadership skills so vital to gifted/talented students in particular, and the entire society in general. The project is viewed as a creative solution not only in a crucial area of society, but in vital areas of individuals' lives.

INTRODUCTION

The materials contained herein will provede the classroom teacher with important information pertaining to future-aimed instructional modules which will provide gifted and talented students with many improtant understandings. A future-aimed curriculum model for gifted students is a device for use in planning instructional sequences. In this manner, teachers of the gifted will be able to develop instructional modules similar to the samples enclosed (Addendum C) which will be described in this foundational unit. It is hoped that this document will provide educators with the kind of background information and ideas which will facilitate the utilization of the instructional modules designed for increasing the level of student attitudes necessary for future survival and futuristic porblem solving.

Since future leaders must convince citizens that changes in living are necessary for human survival, it can be seen that they will need to possess imaginative and unique skills which were often lacking in the past. The model utilized in this foundational unit deals with the identification and development of such characteristics. The activities detailed herein, are designed with this end in mind.

Outline of Foundational Unit

The foundational unit consists of the following sections:

I. Elements of the future-aimed curriculum model.

II. Definition of Terms

III. Description of Processes and Strategies.

IV. Discussion of futurism
    This section gives suggested *initial* activities for use of the
    future-aimed instructional model.

V. Discussion of leadership styles.

VI. Evaluation

VII. Bibliography
VIII. Addenda

The general goals of the foundational unit are to introduce teachers and students to "futures" and to provide the teacher with guidelines in utilizing the sample instructional module (Addendum C). The evaluation section of the foundational unit will provide the teacher and students with some sample techniques for determining the effectiveness of instructional programs in the areas of gifted and talented education. It should be clarified that this unit has been designed to introduce the classroom teacher to basic procedures in connection with futures and leadership. Those persons wishing to acquire additional background of a more theoretical nature, should refer to the bibliography at the end of this unit.

I

ELEMENTS OF THE MODEL

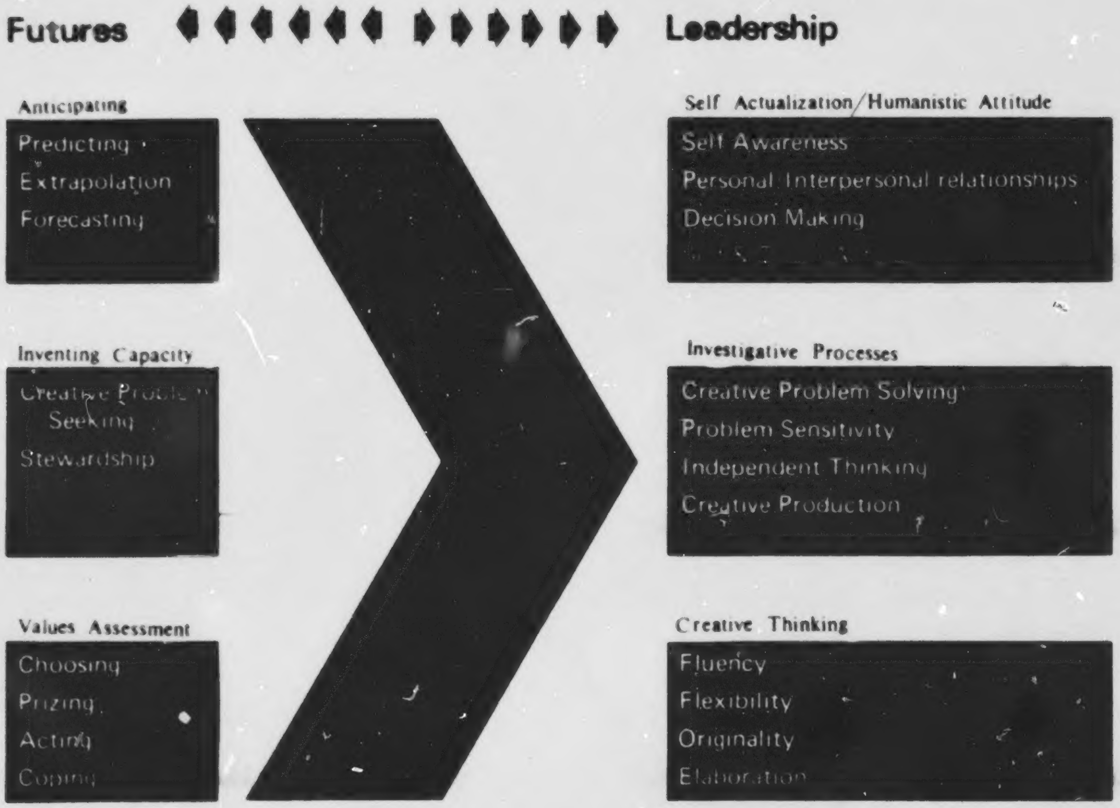
The model described was developed through a coalition of teachers, curriculum personnel, and college consultants who were all interested in the general area of gifted/talented programs. The participants were involved in the Yakima Public Schools project which sought to develop more effective leadership skills through a future-aimed curriculum.

Participants were concerned about the quality of national leadership and experessed the desire that in developing futuristic leadership skills, there were certain areas of concern which must be addressed in such projects. Thus, the model in Figure two indicates the model elements which the coalition felt were crucial for insuring that future leaders in the nation would possess certain key leadership skills and characteristics which would require that they function in a humane and creative manner.

The instructional module to which this unit refers will deal with one or more of the model elements contained therein. Also, the module itself is keyed to the appropriate portions of the Future-Aimed Curriculum Foundational Unit.

It will be noted that the model on page 7 deals with two basic categories, Futures and Leadership. Each category contains three main sections and a number of sub-sections. The next section of this Foundational Unit (Section II) will provide the reader with some definitions of terms which can be found in Figure # 2.

A MODEL FOR DEVELOPING LEADERS
THROUGH
FUTURE-AIMED INSTRUCTION



Futures ◆◆◆◆◆◆ ◆◆◆◆◆◆ **Leadership**

Anticipating
- Predicting
- Extrapolation
- Forecasting

Inventing Capacity
- Creative Problem Seeking
- Stewardship

Values Assessment
- Choosing
- Prizing
- Acting
- Coping

Self Actualization/Humanistic Attitude
- Self Awareness
- Personal Interpersonal relationships
- Decision Making
- [illegible]

Investigative Processes
- Creative Problem Solving
- Problem Sensitivity
- Independent Thinking
- Creative Production

Creative Thinking
- Fluency
- Flexibility
- Originality
- Elaboration

Yakima Public Schools

II

DEFINITION OF TERMS

Throughout this foundational unit and included in the instructional module will be found a number of key terms which need clarification. These key terms are defined as follows:

1. Futurism. This term refers to a relatively new area of study which forces the learner to focus not on the past or the present, but the future. It involves the ability to anticipate conditions, invent solutions, and analyze these solutions according to the possible effects on the environment and to many divergent groups of people.
2. Gifted. In this context, the term "gifted" will refer to the student who possesses one or more unique sets of mental and/or physical characteristics far in excess of the average student. Many programs around the country use as one criterian to identify gifted students, those who fall in the top three to five percent categories on standardized tests.
3. Leadership. The process of directing the course of events for individuals, institutions and/or groups of people. This leadership can assume many different characteristics depending on the particular style of the person.
4. Forecasting. Making a conditional statement about a future possibility.
5. Prediciting. Making a statement about a complete certainity.
6. Extrapolation. The process of applying conditions from a factual set of circumstances to a second set of circumstances with the same or similar conditions in order to make assumptions.
7. Stewardship. In futurism, the term refers to an attitude of concern for protecting the environment and the future of humankind in general.

8. Values Assessment. The process of using a particular frame of reference of value system which offers guides to behavior in a somewhat consistent fashion. These values are developed through the life experiences of a human being.

9. Choosing. Refers to the free selection of values without interference from another source.

10. Prizing. Something a person values or a positive tone. It is held in respect and cherished.

11. Acting. The translation of values held into life behaviors. People engage in activities which are deemed important in their value system. These behaviors are rather consistent in nature.

12. Coping. A means of coming to gripe with life conditions which might do violence to a person's system of values.

13. Fluency. Refers to the capacity to think of many responses to a given stimulus.

14. Flexibility. The variety of categories into which a cluster of responses to a stimulus might fit.

15. Originality. Refers to the uniqueness of an idea, product, or action.

16. Elaboration. A chaining of ideas. When responsing to a stimulus, a person may be reminded of new responses through the original one.

17. Force field Analysis. A procedure used to write a problem statement and goal and then analyze the conditions, positive and negative, effecting the attainment of the goal.

18. Brainstorming. A process utilized to elicit many responses to a question. The unusual type of response is actually encouraged.

19. Triad. A group of three students.

III

PROCESSES & STRATEGIES

1. Brainstorming
2. Triads
3. Teacher as Facilitator
4. Force Field Analysis
5. Stating Objectives

This section will provide descriptions of a number of processes and procudures referred to throughout this foundational unit and the teaching modules.

Brainstorming is a process used to develop ideational fluency, one of the key elements in the Minnesota Tests of Creative Thinking developed by Paul Torrance. The theory is that ideational fluency is a crucial element of the creative process. Often if a person is able to identify a lot of responses to a single stimulus, it is more likely that one of the responses will ultimately result in a problem solution.

The process of brainstorming requires immediate suspension of judgement in order to encourage the most outlandish, "way out" responses possible. Since this technique is often used when conventional problem solving processes have failed, it is important to think of unusual responses. It is suggested that the procedure first be used in small groups. In this manner, the fear of external threat is minimized.

Some people like to think of brainstorming as a game of odds. If a person is able to brainstorm many responses to a given stimulus, the odds are better that one of the responses will result in a effective solution. The importance of this activity can be seen in section VIII which describes the use of a futuristic leadership model.

Triads are useful grouping arrangements for participating in many problem-soliving activities. Their size makes them a psychologically safe unit for brainstorming and other activities which require the participants to offer bold, imaginative responses to a variety of stimuli. The triad is also more valuable than a team of two because there is always a third person to monitor the behavior of the two participants who are interacting. This forces the individuals to pay more attention to the task at hand.

On the other hand, if the groups reach the size of four or more, they sometimes break up into sub-groups which can sometimes become counter-productive. Hence, in many of the activities described herein, the use of the triad is suggested.

Teacher as Facilitator - The six-role model of instruction, developed by the California Teachers Association (2) suggests that the function of the classroom teacher can be broken down into six inditifiable roles. One of these roles is the teacher as facilitator of learning. In this role, the teacher does not function as a director who lectures and tells an entire group of youngsters what to do. On the contrary, his instruction role is to behave as a person who assists in helping students to assess needs, suggests future learning activities, and monitors progress.

It can be seen that this role requires the teacher to treat students as individuals who possess a variety of individual needs. He must structure the class environment in such a manner that students can take much of their own responsibility for learning and evaluating their own progress. Students become much more autonomous learners because the teacher is anxious to see them develop their own individuality and independence. That is one of his goals as a facilitator of learning. This role requires strong ego development on the part of the teacher since needed ego strength cannot be derived through telling students what to do and making decisions as to what constitutes "correct and incorrect" behavior and "proper and improper" learning activities.

Force Field Analysis - Force Field Analysis is a procedure developed by Charles C. Jung through the Northwest Regional Educational Laboratory in Portland. The process describes the action research steps of problem solving as detailed in the following paper which is part of the RUPS (Research Utilization and Problem-Solving) model developed by the NWREL. Teachers can use this procedure by utilizing the actual process described in the Jung paper or the simplified version in Addendum A.

Observable Student Behavior

Observable Student Behavior - Observable Student Behavior describes learner behavior which provides the observer with data indicating that certain learnings have occurred. The teacher is searching for evidence of such behavior. Behavioral objectives provide teachers with such measuring devices. A complete objective should usually consist of three parts. Part one consists of a description of the particular condition under which the behavior should be performed. Part two describes the behavior itself, and part three identifies the level of performance which will be accepted.

Behavior objectives can be categorized into three domains. The cognitive domain deals with all behavior requiring recall or recognition of knowledge and the development of intellectual abilities and skills. A taxonomic classification system developed by Bloom and Associated divides this domain into six levels: Level one, knowledge, merely involves the recall of specific information; Level two, comprehension, represents the basic or lowest level of understanding; Level three, application, involves the use of abstract ideas, theories, or principles in problem-solving processes; Level four, analysis, involves breaking down ideas into component elements; Level five, systhesis, involves the putting together of parts into new wholes. (This is the level at which creativity occurs); Level six, evaluation, involves making judgements and usually requires utilization of the preceeding levels.

The second domain is the affective domain. These are behaviors that describe changes in interest, attitudes, values, and the development of appreciation and adequate judgement. The affective domain consists of five levels. Level one receiving, requires the learner to be sensitized to become aware of or attending to certain phenomena and stimuli; Level two, responsing, necessitates a more active type of affective behavior. It is characterized by compliance which may be a willing response to an inner compulsion, possibly accompanied by some degree of emotional satisfaction; Level three, valuing, is an abstract, internalized concept of worth; Level four, organization, involves organization of values; and level five, characterization by value or value complex, involves consistent behavior in terms of an identifiable value system.

The third domain is the psychomotor domain. These behaviors are primarily concerned with the performance of a physical activity. Bloom and Associates have not yet completed a taxonomic classification system for the psychomotor comain.

Further information can be obtained by referring to Behavioral Objectives and Instruction, by Hibler, Barker, and Miles. Published by Allyn & Bacon Inc., Boston.

IV

FUTURES

> All education springs from some image of the future. If the image of the future held by a society is grossly inaccurate, its education system will betray its youth.
>
> Alvin Toffler

FUTURES FACTS

Since most students in school at the present time will spend most of their lives in the twenty-first century, it stands to reason that educational futurism must become a curcial area of consideration for today's teachers and curriculum planners. Because of the vast changes occurring in today's society and the uncertainty of tomorrow, the need to develop a futuristic frame of reference in students becomes abundantly clear.

One of the emerging concepts among futurists refers to the notion of "small is sufficient". It is thought that no longer can humankind continue to look upon unrestricted growth as a valuable commodity. For example, six percent of the people on earth are consuming 40 percent of the earth's resources. If just twenty percent of the earth's population lived as well as Americans, there would be absolutely nothing left for the other 80 percent.

We can expect the future to see inordinant competition for the world's sources of energy. Oil supplies are expected to disappear in about twenty years. We will probably see increasing material shortages and foreign embargos. The probability of terrorism will likely increase greatly. For example, it is now relatively easy to manufacture atomic bombs. In fact, a student from M.I.T. recently built one himself. This increases the likelihood of these weapons coming into the hands of radicals and terrorists in general.

The hunger problem will drastically increase. In addition to the present world-wide annual rate of about one million deaths from starvation, the lack of proper diet develops a high increase in the rate of mental deficiency. The prospect of continuing hunger will not subside because we add 200,000 people a day to the planet. The population projection by 1985 is six billion, double the present population. To focus more sharply on the population problem, 47 percent of all the Americans who ever lived are alive right now. Between four and five percent of all the humans who ever lived on the planet are also living today.

Hence, the concept of exponential growth is critical for a futures oriented curriculum. To illustrate this concept, get one box of rice and seventeen small bags. In the first bag, place one grain of rice. In the second bag, place double the amount, or two grains. Keep doubling the amount until you get to the seventh bag which will contain 64 grains. Continue doubling this amount in each successive bag until you get to the 13th bag which will contain 16 scant teaspoons. When this amount is doubled in the fourteenth bag, it will contain 1/3 cup. Keep doubling the amount and you will find that it required ½ box (all that ramains) to fill the last bag.

This exercise illustrates that exponential growth goes on indefinitely only in a mathematical sense. As seen in the illustration, such a growth curve reaches a limit and runs out of room. In our world, exponentail growth curves of this sort always reach a limit.

To further illustrate the point, the country of Finland has an annual growth rate of .4%. At this rate it takes 175 years for the population to double. On the other hand, Venezuela has an annual growth rate of 3.4%. At this rate, the population doubles in just 20 years.* Uruguay has an economic growth rate of 1.0% which requires 70 years to double. Conversely, Libya's growth rate is 17.5% annually, necessitating only four years to double. These are exponential growth rates and ultimately, ceilings will be reached. There is a frightening suddeness with which exponential growth rates reach their limits. Students must understand the consequences.

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* (Persons wishing to refer to other futures statistics & inventions should refer to the reference in the bibliography entitled - Future Facts by Stephen Rosen. Simon & Schuster. 1976.)

In order to help students commence to develop some key understandings about futures, Professor Paul Torrance of the University of Georgia has created several instructional sequences designed to assist students in developing an orientation toward future problem solving. The tasks can be undertaken in groups of three which is an effective number of members for a problem-solving team. The initial brainstorming task requires students to think of as many responses as possible to the question. Responses which initially might appear irrelevant should not be discouraged. The group of three seems to provide the most effective environment for soliciting many responses to the question. Students should be strongly encouraged to think of "way out" or outlandish responses. It is critical that judgement be suspended in order to develop a large number of responses. A more complete description of the brainstorming process will be detailed in Addendum B.

SUGGESTED INITIAL ACTIVITIES

Section I - ANTICIPATING THE FUTURE (4) (Pages 19-40)

The activities that follow in Section I allow students to discover procedures for projecting themselves into the future, determining intended actions regarding particular problems, and devoting probable consequences of such actions.

As the student progresses through the model the teacher should be aware that the future-oriented model is attempting to assist the learner:

...to be able to understand one's own concrete situation;

...to become clearer about one's intentions to accept or change a situation.

...to begin to take the immeasurably difficult, but not impossible, actions with other persons of inventing and discovering new ways of actualizing solutions.

The set of activities are open ended, because the future is open to our many explorations. Each participant will respond to the activities in various ways; each will be inventing possible futures in the actions that they take in the present. The form of the activities is both personal and inter-personal. Students should stand for themselves, as individuals, and work with each other, seeking clarity and commitment about intentions and actions.

The teacher, as facilitator, should feel free at any time to use the activities in group arrangements.to meet the needs of the students. Some activities require the students to work alone, in triads, in small groups or in large groups.

WHENEVER NEEDED, THE ACTIVITIES SHOULD BE CONDUCTED IN SMALL GROUPS (TRIADS) FOR CLARIFICATION ON ISSUES PRESENTED WITHIN THE ACTIVITIES. THESE ARE REFERRED TO AS FACILITATION GROUPS.

The first several student activities, Section I (exercises 1 through 5) are accomplished on an individual basis and are designed to assist students in becoming clear about "a state of affairs they want to bring about in the future".

(imagining, Discovering, Inventing) SOMETHING IMPORTANT TO THEM - SOMETHING THAT "OUGHT TO BE" (4)

SECTION II - A SIMULATED PROBLEM SOLVING TASK FOR FUTURISTIC LEADERS

(Pages 40-58)

This task becomes more directive than in Section I as a specific problem is identified with activities designed to facilitate problem solution.

ANY SPECIFIC FUTURE ORIENTED PROBLEM MAY BE USED TO INTRODUCE THE ACTIVITIES.

The "practice problem", Future of the Internal Combustion Machines in America, is not of main importance. The transfer of the process into new areas of concern for the future becomes key. The activities address the facilitation of the individual, alone and with others, to emphasize the relationship of understanding to action.

It should be noted that each activity indicates the various elements of the Futuristic Leadership Model (Figure 2, page 7) which is major in any particular activity.

Elements of the model will have many interweavings from both the futures elements and leadership elements. The teacher knowing his/her students, will make the decision as to which elements become the major focus in any activity.

The following exercises for Section I are to be viewed as a sample guide. The exercise forms cannot be reproduced without the permission of the author.

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FUTURE-AIMED CURRICULUM MODEL

Section I

Anticipating the Future

HOW TO GET STARTED

Introduction:

The first of two problem-solving tasks requires students to proceed through a series of tasks designed to assist in the development of several elements of the model detailed on page 7. Directions for use can be reviewed by consulting the directions on pages 17 and 18.

Teacher Information
for
Exercise # 1

Model Elements:
Futures Leadership
Inventing Capacity Creative Thinking

THE QUESTIONS AND THE EXERCISES FOR SECTION I(4)

(1) The first question is; What do you want to do? or What do you want to make happen? or What do you intend to bring about?

...in the future...which is new, a not-yet occurred state of affairs... which you believe is good and desirable...to which you will commit yourself.

The first exercise is goal-formation. Students go off by themselves, and in solitude think about this. They reflect on an idea they wish to bring about in the future. Something they wish to become involved in to make change for the better. The teacher should assist in this initial activity by giving the students the information that follows:

(a) It is a not-yet-occurred state of affairs. It is new, an invention does not now exist for you, the participant (though it may exist for other persons in some other place or time...out we are talking about your goal).

(b) You are committed to bringing it about, achieving it.

(c) It is something you judge is good, worthwhile, important, ought to be...but is not yet.

(d) It is concrete and specific. A goal is not some vague statement about happiness, education, human development, justice, freedom, equality. It has a operational, "do-able" ring to it. It involves institutions, persons, practices, habits, specific ways of thinking, feeling, acting within a concrete context.

In Goal-formulation:

(a) Do not ask if your goal is probable

(b) Do not ask if your goal is practical

(c) Do not ask if your goal is feasible.

In short the worst mistake is to limit your imagination, to worry about how you're going to get there.

Therefore,

(d) Do not ask how you are going to achieve your goal. Do not formulate a strategy, or a plan.

(e) Write your goal on a blank piece of paper first. You will then share it with other triad members for their comments and criticism.

(f) After receiving criticisms, rewrite your goal in final form on page 22.

Student:

Exercise # 1

GOAL-FORMULATION

GOAL-FORMULATION - Think of an idea that you want to make happen or
something you would want to do or
something you intend to help bring about in the future.

List the "happening: in the following spaces.
Think about it. Write about it. GET SOME IDEAS DOWN

THEN: Write what you want to do about the "happening" in a Goal Summary (Statement)

GOAL SUMMARY: State your goal:

Teacher Information

Exercise # 2

Model Elements

Futures	Leadership
Inventing Capacity	Creative Thinking

Once again, this is an exercise of reflection and imagination which participants do by themselves. They attempt to formulate, in specific and concrete terms, the indicators of the achievement or the actualization of the goal in the future moment of its occurrence. How do they do this?

The practical guidelines for indicator-invention are:

(a) As a participant, you move yourself, through your imagination, out into the future (e.g., year 2,000). Assume your goal has been achieved, and is "now" in existence. Remember, when you first formulated it, (exercise # 1) it was a not-yet occurred state of affairs; but now, in the future "present moment" of the year 2,000 it has occurred!

The question is, How do you know?

The answer is arrived at by inventing some indicators which stand for toe goal's existence. They are signs of the reality of the goal. They stand for the goal's occurrence, but, of course, they are not the goal.

(b) Indicators are very concrete. They are about persons, places, institutions, organizations, behaviors, practices.

(c) Indicators are very specific. Sometimes they have the specificity of numbers, measurement and can be quantified. (By the year 2,000, 50% of something will be or do something.) Sometimes they cannot be quantified.

(d) Indicators are signs. They are clues. They tell us what is happening. But be clear what the indicators stand for. A smile is a clue to your happiness. Or...is it a "crocodile" smile, concealing something?

(e) If your goal is new, an invention, something you intend to bring into existence which is not yet in existence, you may have to invent new indicators.

In the first exercise, you have formulated one goal. In the second exercise, though, one indicator isn't enough. You may need to discover many indicators in order to answer the question, How would you know if your goal was achieved? Try to invent at least four indicators. Write them down on a piece of paper...Then share them with your fellow participants in a facilitation group...

The facilitation groups should provide opportunities for each student to share goal statements and indicators with others. Clarification may need to be asked of each member. As this is projection into the future, there is no right or wrong. Students should be encouraged to use creative thinking skills in assisting or clarifying goals of others.

The teacher will be observant of leadership styles and cognizant of futures elements within the process.

In order to develop the notion of indicators, it may be useful to refer to the goals of someone's goal for the future drawn from history...ie: Columbus, Edison, Lincoln, Sweitzer, Wilson, Nixon, Hitler, Napoleon, Joan of Arc, Madame Curie, Copernicus, Michaelangelo, etc.

Student:

Exercise # 2

INDICATOR INVENTION

The second question is: How will you know when and if your goal is achieved?

Many of us are likely to formulate goals in such a way that we could not tell if we had achieved our goal. We state our goals.so vaguely, in such general terms, that nobody knows what we mean. We do not know what we mean, so we would not be able to know if we have achieved our goal in the future.

GOAL SUMMARY: Write your goal statement here. Keep it in front of you. Reflect upon it.

Indicator # 1

Indicator # 2

Indicator # 3

Indicator # 4

Teacher Information

Exercise # 3

Model Elements:

Futures	Leadership
Anticipating	Self Actualization/ Humanistic Attitude
Values Assessment	Creative Thinking

Becuase we are committed to our goal, because we believe our goal is good (why else formulate it?), we tend to assume that it will be good for other people. But goals, once brought into existence, constitute a human, an institutional, a specific social change, a new state of affairs which will have consequences, which will impact on other persons. We cannot assume that all its consequences will be beneficial. Experience tells us that the successful accomplishment of somebody's past goals has produced many of today's problems. It is the linking effect. Actions, behaviors, institutions, programs, policies are interdependent. They do not exist and stand by themselves, having no effect on anything else.

But suppose the consequences of our goal were bad, were disadvantageous to some people, were harmful. This would be important to know, for it might enable us to reconsider our goal, to modify it. But we cannot judge if consequences are intended or unintended until they have been forecast.

The third exercise is consequence forecasting. Here, participants attempt to forecast the consequences of their goals, as achieved states of affairs. Once again, participnats move out into the future (e.g., the year 2,000) and assume that their goals have been achieved, are in operation, fully and completely. This exercise they also do by themselves. Participants ask a simple question: What are its consequences?

Participants not only look for positive consequences. They also attempt to forecast negative consequences. It is pretty safe to assume that for some persons in the futures they invent, their goals will be harmful. But...for whom, how, why?

The practical guidelines for consequence forecasting are:

(a) Assume your goal is achieved, move out to that time (e.g., the year 2,000) and search for its impacts, its effects.

(b) Like indicators, consequences are specific and concrete. They are things which happen to people, organizations, that occur in concrete settings and situations...a neighborhood, a community, a classroom, a factory, a business, a political, economic or cultural institution, the natural environment, etc. Again, it is useful to think of examples drawn from history such as the atom bomb; oil as a source of "cheap" energy, social security; Henry Ford's auto for everyone; Write Brothers airplane; Lindberg's solo flight across the Atlantic; "Sputnik"; Women's Liberation; the Black Revolution; etc.

(c) Forecast at least six consequences, three positive and three negative. Of course, you could think of many more, but six is a good start. To cover the wide range of possible impacts, consequences should be forecast in different domains and at different levels of aggregation. For example:

Consequences for an individual: some person, to whom you give flesh and blood reality in your imagination. For after all, consequences ultimately happen to people.

Consequences for the action setting of your goal: the situation, location, institution or organization in which your goal takes place, where the "action" is, so to speak. Is it a school, a community, the State Assembly, a national organization?

Consequences for some other setting: some other institution, location, space, level of aggregation...some setting that is not even part of or a focus for your goal, but which will be affected by it, both positively and negatively.

Once again, this exercise is done by the individual participant. It requires imagination and reflection. They write their consequences on a piece of paper. Then they share them with fellow participants in a facilitation group.

Student:

Exercise # 3

CONSEQUENCE FORECASTING

GOAL SUMMARY: Write your goal statement here. Keep it in front of you. Reflect upon it.

Once again, assuming that your goal is achieved and that you know this (through the indicators you have invented), what are the consequences of its achievement, what are its impacts?)

POSITIVE	NEGATIVE
For individuals:	For individuals:
For others: (neighborhood, state nation, etc.)	For others: (neighborhood, state, nation, etc.)

Teacher Information

Exercise # 4

Model Elements:

Futures	Leadership
Values Assessment	Self Actualization/ Humanistic Attitude Creative Thinking

Now comes a moment for review and reflection. So far, each person has formulated a goal for some specific time in the future. These goals have been clarified in small facilitation groups (triads) so that participants can explain to each other what they're up to, what they seek to bring about, Next, participants have invented four indicators, in answer to the question, how will you know when and if your goal has been achieved? These indicators have also been clarified in facilitation groups, so that participants can help each other focus in on their intentions and what these mean. Finally, participants have forecast some consequences of the achievement of their goal, and have also discussed these with fellow students.

So far, each participant has begun to flesh out his or her desirable future. Now there remains another question which students ought to address in order to continue clarifying their intentions for the future.

The fourth question is: How do you know now (in the present) that your goal will have been worth the effort once it has been achieved? To put it another way, wouldn't it be a tragedy to have worked ten or fifteen years towards the accomplishment of a goal, only to discover, upon its achievement, that it really wasn't worth the effort?

In short, in the present we formulate a goal for the future. How are we to know that in that future, when the goal has been achieved, we will value it as we did in the present when we formulated it? To answer that very difficult question, we must once again move into the future of our goals; occurrence and examine ourselves; our being, our preferences, our experience, who we are, what we are, what we are doing. The "future" must become the "present."

The fourth exercise is value-shift assessment in the future "present moment".

Once again, students enter their imagination and carry themselves forward to the future of their goal's occurrence to look at themselves at that moment which becomes, in their imagination, the present. Still, it is extremely difficult for them to forecast what they will cherish, prefer, find of value in the future. So we ask a more basic set of questions: who am I, what do I do, what are my wants, my goals, my failures, my values, my beliefs, my feelings, my fears, my hopes?

The aim of this activity in futures invention is to help students again release their imagination, provide a sense of the reality of the future they are inventing, place themselves in that future in order to reflect, once again, on the desirability and meaning of their goal to themselves. At the end of this exercise comes the moment for participants to re-examine their goals, indicators and consequences and, in the light of this last exercise, modify them as appropriate and fitting to their sense of self in that future "present moment".

The practical guidelines for imagining the future present moment are:

(a) retreat into your imagination, by yourself, in tranquility and relaxation, and allow your human possibilities and desirabilities to emerge into consciousness.

(b) be specific and concrete (once again), for the imagination does not speak to us in generalities, but in the flesh and blood reality of self.

INSTRUCTOR: PLEASE NOTE: Some students are likely to do this with great ease while others find it extremely difficult to accomplish. In a sense it is fantasizing, propelling oneself into another state, perhaps dream-like or ethereal. But it is important to try to visualize a different scene or state of affairs, not simply "today" moved ahead by 20 or more years. Poets and their work are good examples of this.

Student:

Exercise # 4

Use your imagination. Project yourself into your future. YOUR GOAL HAS BEEN ACCOMPLISHED. Answer the following questions. You are in your future !

FUTURE PRESENT MOMENT

WHO I AM

WHAT I DO

WHERE I AM

PERSONS CLOSEST:
  WHO THEY ARE
  WHAT THEY DO
  WHERE THEY ARE

MINIMAL WANTS

FUTURE GOALS

PAST FAILURES

WHAT IF VALUE

WHAT I BELIEVE

WHAT I FEEL

WHAT I FEAR

WHAT I HOPE

Teacher Information
for
Exercise # 5

Model Elements:

Futures	Leadership
Anticipating	Self Actualization/ Humanistic Attitude
Inventing Capacity	Investigative Processes

Up to this point, we have tried to keep our focus on the future rather than the present.

Still, students are concerned about their goal, some important issue-at-hand, a problem, which is believed to exist in the here and now. In short sutdents want to "do" something. They seek action, problem solving, and implementation, here-and-now tasks. They want to be "practical", for practicality is judged a great virtue in American culture. T erefore, they want to connect up the future with the present, to know what to do in the months or uears ahead to bring about desirable futures.

The question is, How do we get from here (the present) to there (the future)? The technique of answering that question is conventionally called planning, which is the way most of us link the present to the future. In this activity, we turn that question upside down. Rather than starting with the present (which we believe we know) and moving into the (unknown) future through forward planning, we address an alternative question.

The fifth exercise is: How did it (the goal) happen? Participants move into the future present moment (e.g., the year 2,000) of the occurrence of their goal and assume it has occurred, fully and completely. The goal has become an event. The indicators are in existence. The consequences have been forecast. The question, then, becomes a conventional historical question. It has happened; but how did it happen? In short, what is the history of the goal's occurrence?

The following exercise is the writing of futures-history, or a history of the future. But how can we do that? Is it not an impossible task? After all, don't we normally understand history to be about the past, in which we employ our memory to remember what has actually happened in order to explain what is happening (an event, occurrence, etc.)?

Exactly so, except for one crucial addition to our conventional understanding of linear time and chronological reality: we also possess a membry of the future. Our memory of the future resides in our experiencing the future through our imagination. In many respects that is the same activity as our memory of the past, for as we bring that memory into awareness, we always employ our imagination. The imagination is the capacity for giving meaning to raw experience, even "past" experience, about which we conjecture and argue all the time. There is no single past. There are many pasts, both among and within each person. There is no single future. There are many futures, both among and within each person. The task is straightforward if we are prepared to employ our memories (imagination) to the future. It is to tell a good story about how our future came into being. (4)

The practical guidelines for futures-history writing are:

(a) once again, move into your imagination, by yourself, in tranquility and relaxation, and reach your future present moment, about which by now you understand a great deal,

(b) now ask yourself how your goal occurred. Work backwards from the future (which has now become the present) to the present (which has now become the past). Remember what happened closest in time to the occurrence of that event. In this way, you move backward, in incremental time periods until you have remembered events only one year away from the present.

(c) once again, seek specificity and concreteness in your imagination. Most of us remember history as a sequence of specific and concrete events or happenings. We remember what people have done: human, political, social, cultural, scientific and technological, economic, institutional events. We can tell quite specific stories about these events, and we often do.

(d) do not look for a necessary history, the only one, the history without which your goal could not have occurred. There are many histories, alternative past and alternative futures. What we seek is sufficiency, plausibility, and believability. Initially, each person must be the judge of what is sufficient, plausible, and believable. After all, it is your story that you remember. You are telling it, not some other person, for they have their own stories.

Student:

Exercise # 5

FUTURES HISTORY

You began this series of activities as a "goal". Are you aware of what "action step" you can take almost immediately to accomplish your goal? The future is now ! Look back and remember what happened to bring your goal into its present state of being.

GOAL
2000

Time
Periods

1991-2000

1986-1990

1981-1985

1979-1980

1977-1978

Teacher Information
for
Exercise # 6

Model Elements:

Futures	Leadership
Inventing Capacity Values Assessment	Self Actualization/ Humanistic Attitude Investigative Processes

By completing the Futures History the future becomes short-term, only a year or two away. The goal is so close, you can almost touch it, grasp it, feel it. It is quite natural to regard that event as one plausible step on the way to the desired future. Certainly, it is no guarantee, for it is the product of a collective memory, employing the imagination. Nonetheless, it is one link (and a very close one !) between the concrete present in which you act and the more distant future which you imagine and intend.

The sixth exercise is: ACTION: Strategies and Tactics

Students conceive the futures-history closest to the present as a possible strategy goal. In short, they aim to bring that event into existence in one or two years by turning it into a goal which they intend to actualize by taking actions in the present. A wide range of possible present actions can be imagined. These we call tactics. This exercise, tactics and strategy, brings to futures-invention a direct appeal to the competencies, experience, resources and settings of the participants. The intended future which students have invented now becomes translated into day-to-day, concrete realities of their lives: who they are, where they are, what they can do, what they intend to do in the present to begin their movement towards those futures they have imagined.

The practical guidelines for tactics and strategy are:

(a) you work by yourself, as an individual, imagining a wide array of tactics in the present, any one of which you believe sufficient to bring about the strategy goal.

(b) these tactics are very specific. They represent what you propose to do. They are possible actions. You look to your own competencies, in any arena of experience, which you can employ to bring about the strategy goal.

(c) you also forecast the consequences of these tactics, both positive and negative, in the same manner you forecast the positive and negative consequences of the goals as occurred states of affairs (exercise three). You assume the tactics (actions) are underway and ask, what will be the consequences in addition to bringing about the strategy goal? Particularly important are the negative consequences of tactics. Tactical advantage is often lost because a specific tactic brings about unforeseen consequences which work to the disadvantage of accomplishing the strategy goal. Only by attempting to forecast both positive and negative consequences can you generate a range of information sufficient to assist in selecting the priority tactics you will propose to the policy team.

ACTION: State your committment
What is the "first step" you will take to reach your strategy goal?

MOVE TOWARDS THOSE FUTURES YOU HAVE IMAGINED

Student:

Exercise # 6

TACTICS AND STRATEGY

STRATEGY GOAL

TACTIC # 1

(+) CONSEQUENCE (1A)

(-) CONSEQUENCE (1B)

TACTIC # 2

(+) CONSEQUENCE (2A)

(-) CONSEQUENCE (2B)

ACTION: What is *your* committment?

Section I of the Future-Aimed Curriculum Model has provided simple exercises whereby "the future becomes now." The sharpening of intellectual processes through these activities should prepare the student to realize they can project themselves into the future, they can discover alternatives, they are a force for change, they can become leaders of the future.

Section II, Future of the Internal Combustion Machines in America, which follows will focus more specifically on an identified problem with continued sample exercises for students.

Students should be given time to practice the suggested futures-activities, not for their own sake, but to become more competent in their ability to transfer the process into many aspects of human possibilities.

SUGGESTED INITIAL ACTIVITIES

Section II

A Simulated Problem Solving Task for Futuristic Leaders

INTRODUCTION

The second problem solving task focuses on a specific topic, the internal combustion machine. It is suggested that the teacher review the instructions on page 18.

A SIMULATED PROBLEM-SOLVING TASK
FOR FUTURISTIC LEADERS

MODEL ELEMENTS

Investigative Attitude (Leadership)

Inventing Capacity (Futures)

TOPIC - Future of the Internal Combustion Machines in America.
Topics for the following activity sheets may come from the students.
This is a suggested topic.

TASL I - Write a statement of the problem(s) as you view it(them). (A statement of the problem should include a statement of a negative condition and the results of the condition.)

You may wish to identify both a current and a future problem. For more information, re-read the paper on Force Field Technique of Diagnosing a Problem, by Charles C. Jung, Addendum A. A sample problem statement might read as follows: Due to a lack of strong legislation, raw sewage is still being dumped into the Big Windy River, resulting in pollution levels which exceed the safe limits established by the Environmental Protection Agency.

MODEL ELEMENT

INVESTIGATIVE ATTITUDE (LEADERSHIP)

TASK II - Precedent Finding. (Determine the reasons for the development of the original condition or invention. Why did it occur and for what purpose(s) and to solve what problem(s)?

MODEL ELEMENT

INVESTIGATIVE ATTITUDE (LEADERSHIP)

TASK III - Goal Statement. (Identify the goal you would identify in order to solve this specific problem. This goal does not have to be written in behavioral terms but it should indicate a positive direction for dealing with the identified problem).

MODEL ELEMENT

INVESTIGATIVE ATTITUDE (LEADERSHIP)

TASK IV - Objectives. (State as many specific behavioral objectives as you need in order to check on the attainment of the general goal).

1. ______________________________

2. ______________________________

3. ______________________________

(Add more objectives as needed)

MODEL ELEMENTS

INVESTIGATIVE ATTITUDE (LEADERSHIP)

ANTICIPATING (FUTURES)

TASK V - Force field analysis. (For each objective, develop a force field analysis, listing forces helping to achieve the objective and hindering forces. You may need several of each sample form to complete this total task.

Objective____

FORCES FOR	FORCES AGAINST

MODEL ELEMENT

ANTICIPATING (FUTURES)

TASK VI - Consequence forecasting (Determine as many of the consequences of your objective achievement as possible on the next few pages. Try to anticipate the consequences as they might affect the people and institutions identified in the categorical listings.

A
SOCIOECONOMIC GROUPS OF PEOPLE

POSITIVE	NEGATIVE
Objective 1	Objective 1
Objective 2	Objective 2
Objective 3	Objective 3

B

POLITICAL IMPLICATION

POSITIVE	NEGATIVE
Objective 1	Objective 1
Objective 2	Objective 2
Objective 3	Objective 3

[illegible]

TECHNOLOGICAL GROWTH AND NATURAL RESOURCES

POSITIVE	NEGATIVE
Objective 1	Objective 1
Objective 2	Objective 2
Objective 3	Objective 3

D

EMPLOYMENT AND ECONOMICS

POSITIVE	NEGATIVE
Objective 1	Objective 1
Objective 2	Objective 2
Objective 3	Objective 3

E

QUALITY OF LIFE AND ENVIRONMENT

POSITIVE	NEGATIVE
Objective 1	Objective 1
Objective 2	Objective 2
Objective 3	Objective 3

F

INTERNATIONAL RELATIONS

POSITIVE	NEGATIVE
Objective 1	Objective 1
Objective 2	Objective 2
Objective 3	Objective 3

MODEL ELEMENTS

VALUES ASSESSMENT (FUTURES)

SELF ACTUALIZATION (LEADERSHIP)

G

AFFECT ON VALUE SYSTEMS - VALUE CLARIFICATION

Objective ____

1. How the objective affects my own values.

POSITIVE	NEGATIVE

2. Possible effects on the values of other identifiable sub groups.

POSITIVE	NEGATIVE

MODEL ELEMENTS

INVESTIGATIVE ATTITUDE (LEADERSHIP)

ANTICIPATION (FUTURES)

TASK VII - Force Field Analysis (Re-design your force field analysis for your rewritten objectives).

Objective____

FORCES FOR	FORCES AGAINST

OBJECTIVE

FORCES FOR	FORCES AGAINST

MODEL ELEMENT

INVESTIGATIVE ATTITUDE (LEADERSHIP)

TASK VII - Restructuring of Objectives (make any changes you feel are necessary in your objectives).

1. ______________________________

2. ______________________________

3. ______________________________

MODEL ELEMENT

CREATIVE THINKING (LEADERSHIP)

TASK VIII - Brainstorming Action Alternatives for meeting objectives. (Use brainstorming techniques to determine possible action alternatives)

Objective ______________________________

MODEL ELEMENTS

VALUES ASSESSMENT (FUTURES)

INVESTIGATIVE ATTITUDE (LEADERSHIP)

TASK IX - Prioritize Action Alternatives. (List in their order of importance).

Objective ____

V

LEADERSHIP STYLES

History has shown repeatedly that the persons who are in positions of leadership quite often do not possess adequate skills which would have allowed them to lead intelligently, creatively, and humanely. Our history books are full of ill fated leadership ventures which have resulted in mass assassinations and national scandals. Moreover, many of our national and international leaders have come from the ranks of the gifted and talented. However, woefully few planned activities in public school programs prepare youngsters for the assumption of such roles in a wise and prudent fashion are currently in operation.

There is a need to develop and implement, within the public shcools, future-aimed curriculum models that will assist gifted students to develop and practice leadership skills through future-aimed instructional activities. This section seeks to acquaint the reader with some different leadership styles and suggests one for student use in public school environments. The following analysis of leadership styles developed by Professor Jerry Novotney of Pepperdine University will offer some insights.

An Analysis of Leadership Styles
Developed by Professor Jerry Novotney
UCLA

(Adapted from the monograph entitled:
Organizational Climate of Schools by
Andrew W. Halpin & Don B. Croft. (1)
University of Chicago, 1963)

1. The Open Climate. The open climate depicts a situation in which the members enjoy extremely high esprit de corps. Participants work well together without bickering and griping. They are not burdened by busy work or routine reports. The leaders' policies facilitate staff persons' accomplishment of their tasks. On the whole, group members enjoy friendly relations with each other, but they apparently feel no need for an extremely high degree of intimacy. The leader acts on example by working hard, but, depending upon the situation he can either criticise the actions of staff persons, or can, on the other hand, go out of his way to help. He possesses the personal flexibility to be "genuine" whether he is required to control and direct the activities of others, or be required to show compassion in satisfying the social needs of individuals. He has integrity in that he is "all of a piece" and, therefore, can function well in either situation.

2. The Autonomous Climate. The distinguishing feature of this organizational climate is the almost complete freedom that the leader gives to staff persons to provide their own structures-for-interaction, as well as to find ways within the group for satisfying their social needs.

When staff persons are together in a task-oriented situation, they are "engaged"; they achieve their goals easily and quickly. There are few minority pressure groups, but whatever stratification does exist among the group members does not prevent the group as a whole from working well together. The essential point is that staff persons do work well together and do accomplish the tasks of the organization. The group leader has set up procedures as regulations to facilitate the task of staff persons. Staff persons do not have to run to the group leader every time they need supplies. The morale of the staff is high, but not as high in the open climate. The high morale probably stems largely from the social-needs satisfaction.

The leader remains aloof from the staff persons, for he runs the organization in a business-like and rather impersonal manner. His leadership style favors the establishment of procedures and regulations which provide guidelines that the staff persons can follow. He does not personally check to see that things are getting done. He does not force people to produce, or does he say that "we should be working harder." Instead, he appears satisfied to let staff persons work at their own speed. On thw whole, he is considerate and he attempts to satisfy the social needs of staff persons.

3. The Controlled Climate. The controlled climate is marked above everything else by a press for achievement at the expense of social-needs satisfaction. Everyone "works hard" and there is little time for friendly relations with others or for deviation from established controls and directives. This climate is over-weighted toward task-achievement and away from social-needs satisfaction. Nonetheless, since morale is high,

this climate can be classified as more "open" than "closed."

The staff persons are completely "engaged" in the task. They do not bicker, gripe or differ with the leader's directives. They are there to get the job done, and they expect to be told personally just how to do it. There is an excessive amount of paperwork, routine reports, busy owrk and general hindrance, which get in the way of staff persons' task accomplishments. Few procedures have been set up to facilitate their work. Accordingly, staff persons have very little time to establish very friendly social relations with each other, and there is little feeling of camaraderia.

The leader is described as dominating and directive; he allows little flexibility within the organization and he insists that everything be done "his" way. He is somewhat aloof; he prefers to publish directives to indicate how his procedure is to be followed.

4. The Familiar Climate. The main feature of this climate is the conspicuously friendly manner of both the leader and the staff persons. Social-needs satisfaction is extremely high, while, contrary-wise, little is done to control or direct the group's activities toward goal achievement.

The staff persons are disengaged and accomplish little in a task-oriented situation, primarily because the leader exerts little control in directing their activities. Also there are too many people trying to tell others how things should be done. The leader does not burden the staff persons with routine reports; in fact, he makes it as easy as possible for them to work. Procedural helps are available. Staff persons have established personal friendships among themselves, and socially, at least, everyone is part of a big happy family. "Morale," or job satisfaction is average, but it stems primarily from social-needs satisfaction. In short, the esprit that is found in this climate is one-sided, in that it stems almost entirely from social-needs satisfaction.

The behavioral theme of the leader is essentially, "let's all be a nice happy family"; he evidently is reluctant to be anything other than considerate, lest he may, in his estimation, injure the "happy family" feeling. He wants everybody to know that he, too, is one of the group, that he is in no way different from anybody else.

The leader is not aloof and not impersonal and official in his manner. Few rules and regulations are established as guides to suggest to staff persons how things should be done. The leader does not emphasize production; nor does he do much personally to insure that staff persons are performing their tasks correctly.

5. The Paternal Climate. The paternal climate is characterized by the ineffective attempts of the leader to control the staff persons, as well as to satisfy their socal needs. His behavior is usually "non-genuine" and is perceived by the staff persons as non-motivating. This climate is, of course, a closed one.

The staff persons do not work well together; they are split into factions. Group maintenance has not been established because of the leader's inability to control the activities of the staff persons. Few hinderences burden staff persons in the form of routine reports, administrative duties and committee requirements, mainly because the leader does a great deal of the busy work himself. Staff persons do not enjoy friendly relationships with each other. Essentially, the staff persons have given up trying; they let the leader take care of things as best they can. Obviously, low esprit results when staff persons obtain inadequate satisfaction and respect of both task accomplishment and social needs.

The leader, on the other hand, is everywhere at once, scurrying here and there, checking, monitoring and telling people how to do things.

In fact, he is so non-aloof that he becomes intrusive. He must know everything that is going on. He is always emphasizing all the things that should be done, but somehow nothing does get done. The leader sets up schedules, etc., but does not let the staff persons alter them. His view is that "daddy knows best."

6. The Closed Climate. The closed climate marks a situation in which the group members obtain little satisfaction in respect to either task achievement or social needs. In short, the leader is ineffective in directing the activities of the staff persons, and at the same time, he is not inclined to look out for their personal welfare. This climate is the most closed and the least "genuine" climate identifiable.

Staff persons are disengaged and do not work well together, consequently group achievement is minimal. To secure some sense of achievement the major outlet for staff persons is to complete a variety of reports and to attend a host of "housekeeping" duties. The leader does not facilitate the task accomplishment of the staff persons. Esprit is at a nadir, reflecting low job satisfaction and social-needs satisfaction. The salient bright spot that appears to keep the staff persons on the job is that they do obtain satisfaction from their friendly relations with other staff persons.

The leader is highly aloof and impersonal in controlling and directing the activities of the staff persons. He emphasized production and frequently says "we should work harder." He sets up rules and regulations about how things should be done, and these rules are usually arbitrary. But his words are hollow, because he himself possesses little thrust, and he does not motivate the staff persons by setting a good personal example. His cry of "let's work harder" actually means, "you work harder." He expects everyone else to take the initiative, yet he does not give them the freedom required to perform whatever leadership acts are necessary.

Leadership for a Democratic Society

In this foundational unit, we are arguing that the ideal leadership style for a democratic society is a combination of the open and autonomous climate. These two styles require the development of high levels of citizen responsibility. The writings of Thomas Jefferson continuously stressed the need for the development of a well-educated, mature citizenship which could make the kinds of citizen decisions necessary for maximum participation in problem-solving processes. Hence, it would appear that several of the leadership styles described in the Novotney Model would not be compatible with such a philosophy. We are suggesting, then, that activities which are seeking to develop strong leadership capabilities be designed with this end in mind.

"Guess the Leader"

In order to demonstrate the differences in leadership styles, students are asked to play a game called "Guess the Leader". The teacher should divide the class up into six groups and assign each group a single leadership style. Then, the students must think of a leader from history or a contemporary leader who is or was extremely well known. This information is not shared with the other groups. Each group must then identify as many leadership characteristics of that particular person as possible. This should be done separately at first.

Next, each group should make a brief presentation, describing to the total group the leadership characteristics and/or accomplishments of their particular leader. The rest of the class then attempts to guess the name of each group's leader. Each group has a turn and the group which guesses the largest number of individuals wins the contest. In this manner, students can begin to understand some elements of the various types of leadership.

Leadership Checklist

The following checklist can be used by students to assess their own leadership capabilities. It has been developed to reflect the elements of democratic leadership (or the combination of atuonomous and open as indicated in the Novotney

Model) that we are seeking to develop in students. It can be used in a number of different ways to evaluate the attainment of leadership capacities. It is suggested that it be used at periodic intervals and analyzed in informal evaluation sessions between the teacher and student.

It is very important to realize that the leadership attributes on the list are to be used as checkpoints. All human beings have their imperfections and weaknesses. It is important to focus on these and deal with them directly and honestly instead of disguising or ignoring them. Some strong attributes could over-compensate for weaker ones. Thus, it's the "mis" of all these desirable leadership qualities that make us truly "human".

Directions:

The checklist should be distributed to students for self evaluation. The teacher can discuss the evaluation with the student if appropriate. It can also be useful for group leadership analysis activities.

Yakima Public Schools

LEADERSHIP CHECKLIST

(Student's Form)

Circle almost always if you almost always do this.
Circle many occasions if you do this on many occasions.
Circle once in a while if you do this once in a while.
Circle almost never if you almost never do this.

When functioning as a leader I:

Get my ideas clearly across to others.

almost always   many occasions   once in a while   almost never

Understand my own feelings.

almost always   many occasions   once in a while   almost never

Set goals and accomplish them after seeking advice from others.

almost always   many occasions   once in a while   almost never

Think of good ideas.

almost always   many occasions   once in a while   almost never

Figure out why and how things happen.

almost always   many occasions   once in a while   almost never

Lead a group or team well.

almost always   many occasions   once in a while   almost never

Try to figure out how my decisions will affect others.

almost always   many occasions   once in a while   almost never

Draw logical conclusions.

almost always   many occasions   once in a while   almost never

Accept people's ideas and values different from mine.

almost always   many occasions   once in a while   almost never

Do what I say I will.

almost always   many occasions   once in a while   almost never

Accept changes in plans or situations.

almost always   many occasions   once in a while   almost never

Make up my mind without advice from others.

almost always   many occasions   once in a while   almost never

Accept my own mistakes.

almost always   many occasions   once in a while   almost never

Encourage others to assume responsibilities.

almost always   many occasions   once in a while   almost never

Give others credit and praise for their work.

almost always   many occasions   once in a while   almost never

Care about and try to understand other's feelings.

almost always   many occasions   once in a while   almost never

Accept suggestions and constructive criticism.

almost always   many occasions   once in a while   almost never

Organize myself and my work.

almost always   many occasions   once in a while   almost never

Accomplish my goals before deadlines.

almost always   many occasions   once in a while   almost never

Offer constructive criticism tactfully when necessary.

almost always   many occasions   once in a while   almost never

Of crucial importance in the development of leadership skills is the acquisition of good inter-communication competencies.

A project for gifted students, Sunnyvale School District
750 East Arques
Sunnyvale, California 94088

supports this idea using the definition of leadership as:

> "Working through and with
> individuals and groups to
> accomplish group goals".

Teachers wishing to have students participate in these activities are urged to utilize interpersonal communication skills published by,

Northwest Regional Educational Laboratory
710 S.W. Second Avenue
Portland, Oregon 97204

VIII

EVALUATION

Evaluation by the classroom teacher should be continuous and utilized as a means for future program planning. More important, if students are to grasp the full significance of the proper leadership role for participation in a democratic society, the emphasis must be on internal (learner) evaluation as opposed to evaluation conducted by the teacher. Teacher evaluation can be accomplished primarily by the analysis of behavioral objective completion. Provided that a good job has been done of translating concepts into behavioral objectives, the evaluation is almost automatic. All the teacher needs to do is make sure that the objectives have been attained. If so, the teacher can assume that the conceptual understandings have been achieved.

Persons wishing to examine such a conceptually based planning model might consult Conceptual Planning for Creative Learning by Mitchell and Associates, Kendall/Hunt Publishing Company, Dubuque, Iowa, 1976.(5) This model relies on the evaluation of behaviors which are tied directly to concepts.

Of equal importance to the evaluation of specific programs is the evaluation of classroom learning climates in general, and student/teacher interpersonal relationships in particular. An excellent resource to consult is Diagnosing Classroom Learning Environments by Fox and Associates, published by SRA in Palo Alto, California.(6) This booklet describes a number of sociometric measuring devices for assessing classroom learning atmospheres. These devices can offer important insights to teachers who are interested in achieving optimum learning conditions in their classrooms.

Renzulli and Associates have developed a series of scales for rating behavioral characteristics of superior students. The scales are designed to acquire teacher assessments of students' characteristics in the areas of learning, motivation, creativity, leadership, art, music, drama, communication and planning.

These are profile measures and teachers might wish to assess pre and post treatment differences in these characteristics. They are available through Creative Learning Press, 530 Silas Deane Highway, Wethersfield, Connecticut, 06109.(7)

However, teachers wishing a simple, quick measure of teaching effectiveness might benefit from the simple activity evaluation model to follow. Negative terms are found on the left side of the model and positive statements on the right. A quick check can assist the teacher in determining the general effectiveness of a unit of instruction.

In summary, the following guidelines are offered for the three evaluation procedures described.

I. Analysis of behavioral objectives. This is accomplished through teacher of objective attainment. For maximum effectiveness it should be conducted periodically. When objectives are not being achieved, instructor modification must be made to re-direct the activities which are being used as vehicles for attaining the learning objectives.

II. Diagnosing Classroom Learning Environments by Fox & Associates. This booklet has a number of sociometric evaluation devices for assessing learning elements and the levels of pupil-teacher interaction. Tools #1 & # 10 are particulary effective for determining such conditions. Also, Tool # 20 is useful for assessing self concept. They are self-analysis tools which are useful for individual conferences.

III. The Renzulli Scales are useful for evaluating behavioral characteristics of superior students. The following ten scales have been developed and field tested.

   A. Learning Characteristics
   B. Motational Characteristics
   C. Creativity Charactistics
   D. Leadership Characteristics
   E. Artistic Characteristics
   F. Musical Characteristics
   G. Dramatics Characteristics
   H. Communication Characteristics (Precision)
   I. Communication Characteristics (Expressiveness)
   J. Planning Characteristics

ACTIVITY EVALUATION

Directions: Below, you will find two lists of words which have been arranged in pairs. Please place a check in the proper location according to the reaction you had to the activity just completed. (Place check in space below.)

Interesting		Dull
Fun		Boring
Learned lots		Learned little
Formal		Informal
Autocratic		Democratic
Student planned		Teacher planned
I liked it		I hated it
Challenging		Uninspiring
Worthwhile		Worthless
Goals were clear		Goals unclear
I'd like more		No more, please!

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ADDENDUM A

Force Field Technique of Diagnosing a Problem

Charles C. Jung

FORCE FIELD TECHNIQUE OF DIAGNOSING A PROBLEM

Charles C. Jung
(Adapted from Research Utilizing Problem
Solving, published by Northwest Regional
Educational Laboratory, Portland, Oregon (3)

Suppose that a youth worker came to you and said, "The group of children that I'm working with this year is very difficult. There is one child in particular who seems to cause the trouble. Do you think I should remove that child from the group? Do you believe this might solve my problem? You would need to ask many questions of this youth worker in order to be helpful. This situation can be compared to a patient who comes to a doctor and says, "I have a terrible headache. Do you think I should undergo brain surgery?" The doctor would naturally conduct a careful diagnostic examination before even considering what action to take in order to solve the problem.

In both of these problem situations, someone has jumped directly from a problem situation to considering a plan of action. The real problem in both cases is that several important steps in the problem-solving process have been left out. This paper will review these steps and give particular attention to the force field technique of diagnosing a problem.

Action-Research Steps of Problem Solving

1. Identifying the Problem - Who is causing it and who is affected by it? What specific goals would need to be attained in order for the problem to be resolved? What kind of a problem is it: e.g., Self: Conflicted about my values, attitudes; my lack of skills; my inability to express feelings; a different perception. Other: Lack of understanding; not willing to use his resources; lack of skills; conflicted about values attitudes.

   Organization: Lack of communication channels; lack of scheduled time and resources; unclarity about membership roles and norms; power conflicts in decision making; lack of support for innovation.

   Society: Community values in conflict with school values; lack of clarity about goals; other structures in conflict with school structures.

What sources from research information would be needed to more clearly define the type of problem and validity of goal solution?

2. Diagnosing the Problem Situation - Once the problem has been clearly stated in terms of goals to be attained in order to resolve it one should identify the forces operating in the situation which tend to push toward a particular goal and those pushing against attaining that goal. As the true forces are identified, it often becomes clear that the goals which were first thought to represent a solution are incorrect or inadequate ones. New goals must be stated and new forces identified repeatedly as one works toward resolution of the problem. Diagnosis is a continuous part of problem solving.

3. Considering Action Alternatives - As diagnostic work progresses, a range of action alternatives should emerge. Each should be considered in relation to knowledge of the forces operating in the problem situation. If one or some combination of the alternatives is tried, what will happen to the forces pushing toward or away from a particular goal? How will the forces operate to influence the success or failure of trying a particular action alternative?

4. Trying Out an Action Plan - At some point, one or a combination of the action alternatives will be attempted. As the attempt is made, information will be needed to assess whether there is movement toward the goals. This would include discovering which forces are changing so as to understand what is accounting for movement, or lack of it. Such assessment provides both an evaluation of progress and a new diagnostic picture. It clarifies the next action steps which need to be taken. It may also identify additional skills which may be needed in order to move ahead. This latter type of information should be the basis of in-service training closely related to any action program.

5. Diffusion and Adaptation - Information gained from action experience in dealing with a problem should be shared with others who face similar problems. Information to be diffused should include: A clear, specific statement of the problem; the forces involved in the problem situation; a description of action taken to change the forces; results of action including failures as well as successes; special problems that were encountered; and special skills that were needed to carry out particular actions. These kinds of information make it possible for persons in another setting to adapt elements of what was tried to their own diagnoses of their particular problem situations.

Continuous attention to diagnosis is the cornerstone of the action-research steps of problem solving. Without complete, accurate diagnosis problems in youth work tend to multiply. Fads are accepted which don't really fit the local situations where they are applied. Potentially good solutions are abandoned without realizing the slight changes which were needed to make them work. Decisions are made on the basis of peoples' ability to argue or on the status of positions which they hold rather than on the true facts of the situation. Helpful innovations in youth work are rediscovered and die repeatedly without being effectively shared as people don't know what to tell or what to ask about how they worked.

There are probably several reasons why good diagnostic work is not engaged in very actively by people who work with youth. One is that it is comparatively difficult to identify clear goals in helping youth to grow. An engineer can make accurate estimates of the kinds and quantities of materials he needs to build a power dam to produce a given amount of electricity in a certain setting. It is vastly more complicated for a youth worker to estimate the kind of experience that will help a group of children develop a trait, such as interdependence appropriate to their innate abilities and the probable opportunities of their life setting.

It is often difficult to get accurate information even when goals can be stated clearly in work with youth. The medical doctor listens with his stethescope, views with his x-ray machine, and analyzes with his chemical and electronic equipment. Youth workers are only beginning to be provided with the tools being developed by social scientists to gather the sorts of diagnostic data of critical importance to their efforts. These include ways to be sensitive to feelings, inner values and attitudes, ways to learn of the perceptions people have of each other and the norms which operate in groups to influence the behavior of the individuals in them.

An especially important barrier to becoming involved in good diagnostic work is simply the lack of awareness of how important and satisfying such effort can be. Spending time gathering information, thinking about it, and planning on the basis of it is not a traditional part of the youth worker's role. There is little support or reward for time which is not spent in carrying out action or for time spent in working directly with youth or carrying out administrative details.

FORCE FIELD TECHNIQUE FOR DIAGNOSING A PROBLEM

To use this technique, one must first state a problem in terms of a clear goal. An example will be used to illustrate the technique. Mr. Smith is a youth worker who states his problem as follows:

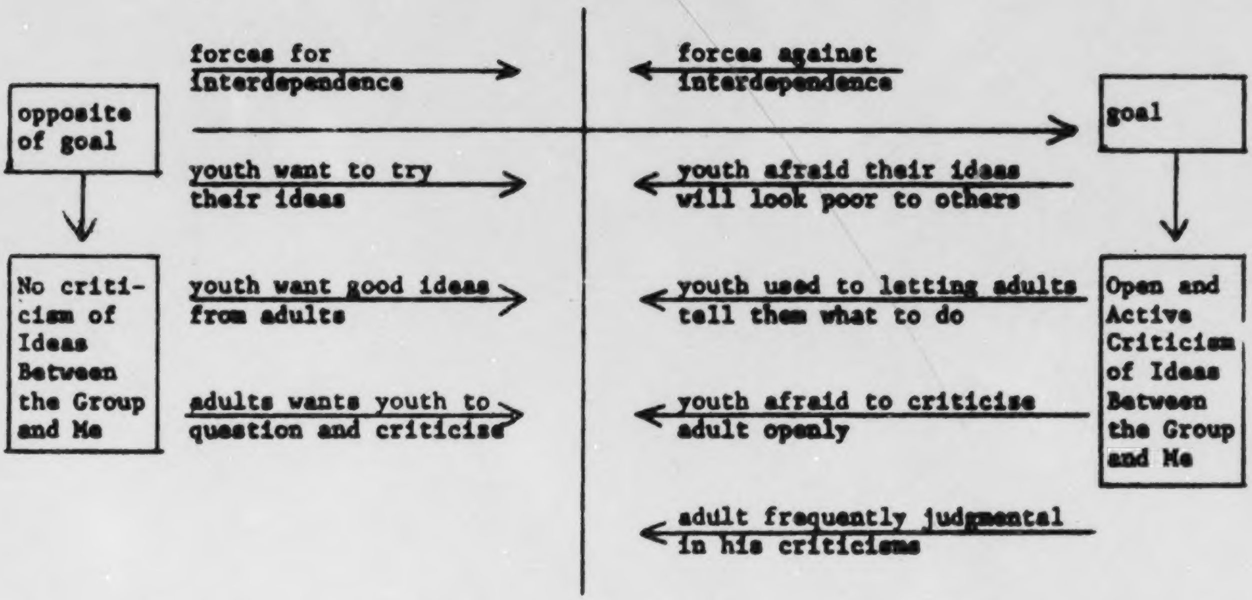
> As an adult working with a group of youth, I'm concerned about developing interdependence between us. I don't want the youth in our group to do things just because I suggest them. On the other hand, I don't want them to reject ideas just because they come from the adult. I have a goal of the group becoming more open and active in criticizing what they see as helpful and nonhelpful in my suggestions and of seeking my reactions to theirs.

Mr. Smith is now ready to write out his first force field. He takes a blank sheet of paper and writes the general nature of the problem at the top. He then draws a horizontal line across the top. On the left side of the line he writes the words "forces for interdependence." On the right side he writes "forces against interdependence." In the right-hand margin of the paper he writes the goal which he has specified for his problem, "open and active criticism of ideas between the group and me." In the left-hand margin of the paper he writes the opposite of his goal, "no criticism of ideas between the group and me."

Now he draws a vertical line down the middle of the page. This line represents the way things are at the moment with regard to openness and activeness of criticism between him and the group. Things are the way they are at the moment because there is a set of forces pushing from the left toward openness and activeness of criticism, and an equal set of forces pushing from the right against openness and activeness. If the forces on the left become stronger while those on the right stayed the same or got weaker, then the line would move toward the right - toward more openness and activeness. Mr. Smith must now write out what he believes to be the important forces operating in this situation. Diagram I presents his first effort at writing out the force field.

DIAGRAM I

Force Field #1 - Interdependence Between the Group and Me

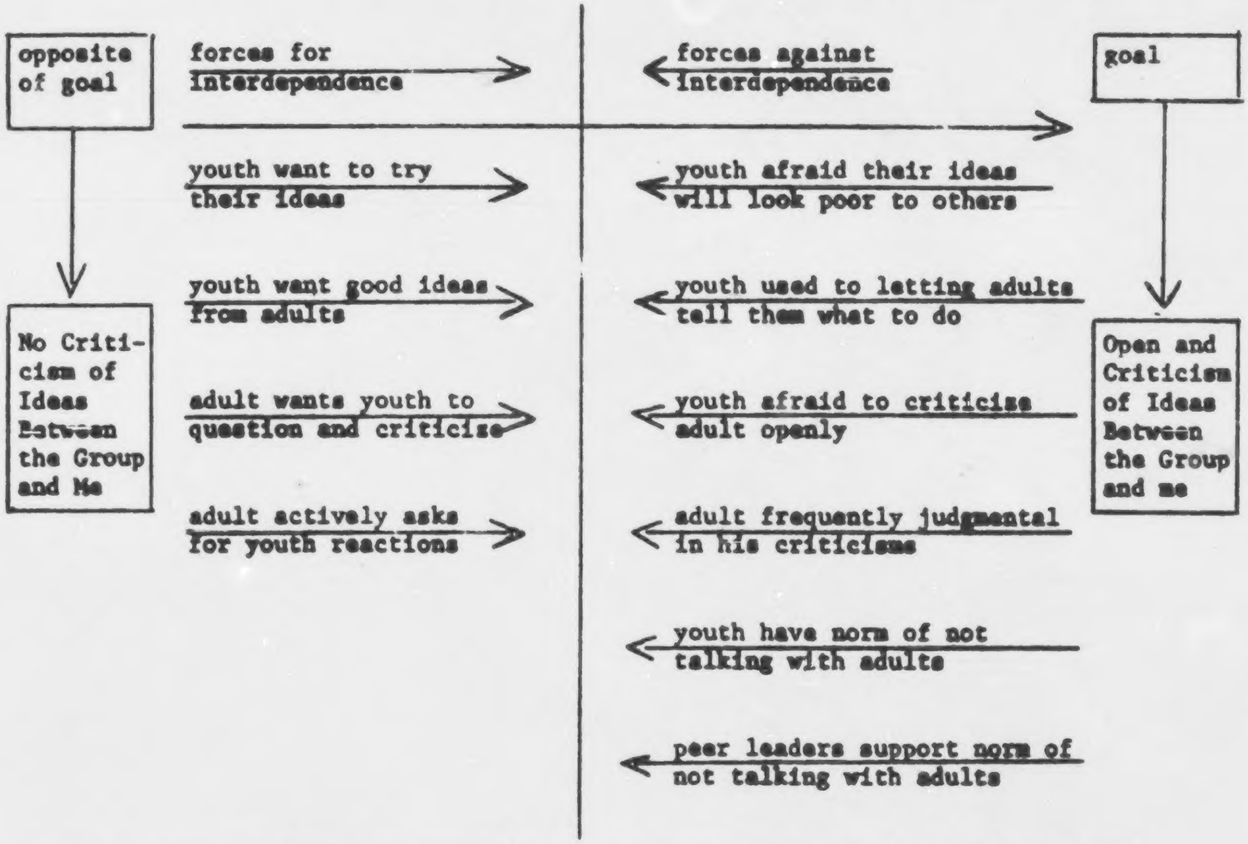

opposite of goal
forces for interdependence
forces against interdependence
goal
youth want to try their ideas
youth afraid their ideas will look poor to others
No criticism of Ideas Between the Group and Me
youth want good ideas from adults
youth used to letting adults tell them what to do
Open and Active Criticism of Ideas Between the Group and Me
adults wants youth to question and criticise
youth afraid to criticise adult openly
adult frequently judgmental in his criticisms

Mr. Smith wasn't very satisfied with his first effort to draw the force field. He guessed that there must be additional forces than the ones he had thought of. During his next meeting with the youth, he raised the question of how people felt about discussing each other's ideas. He asked specifically for their reactions to some of the ideas he had recently suggested. He especially asked them to share their reactions. They also seemed reserved about giving them. One of them told him privately later, "We just don't talk about that with adults. I would have said some things, but the other kids would have thought I was being an apple polisher."

Mr. Smith believed he had learned two things from the discussion. One was that an additional "force for" was to actively ask the youth for their reactions. Another was that there was some kind of norm among the youth about not talking to adults in a way that would be seen as "apple polishing." This norm appeared to be an important "force against." He thought maybe the peer leadership of the group was an important "force against" which was affecting the way this norm operated in the group. In Diagram II we see how Mr. Smith added these three forces to the force field.

DIAGRAM II

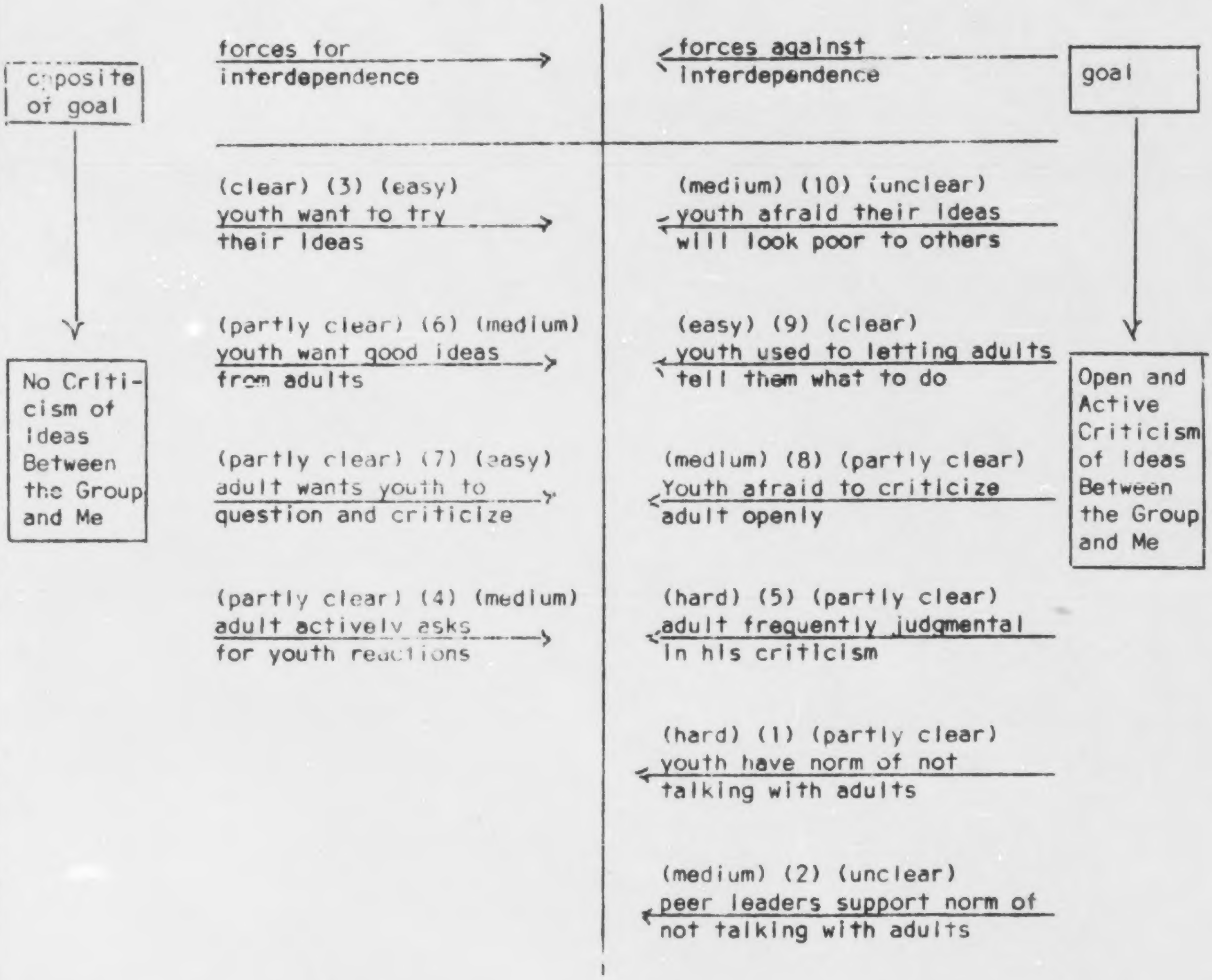
Force Field #2 - Interdependence Between the Group and Me


opposite of goal
forces for Interdependence
forces against Interdependence
goal
youth want to try their ideas
youth afraid their ideas will look poor to others
youth want good ideas from adults
youth used to letting adults tell them what to do
No Criticism of Ideas Between the Group and Me
Open and Criticism of Ideas Between the Group and me
adult wants youth to question and criticize
youth afraid to criticize adult openly
adult actively asks for youth reactions
adult frequently judgmental in his criticisms
youth have norm of not talking with adults
peer leaders support norm of not talking with adults

Mr. Smith now did three additional things with his force field. First he ranked all of the forces in terms of how important he thought they were in trying to change the situation. He put a number 1 by that force field which he believed would yield most movement toward the goal if it could be changed. He put a 2 by the force that he thought would result in the second greatest amount of movement if changed - and so forth. Second, he rated each force in terms of how easy he thought it would be for him to bring about some change in it. He gave each force a rating of hard, medium, or easy. Third, he again rated each force, this time in terms of how clear he was about whether it really was a force. Was he just imagining it to be a force, or was it really operating? He labeled each force as clear, partly clear, unclear. Diagram III presents Mr. Jones' force field at this point.

DIAGRAM III

Force Field #2 - Interdependence Between the Group and Me


opposite of goal
forces for interdependence
forces against interdependence
goal
(clear) (3) (easy) youth want to try their ideas
(medium) (10) (unclear) youth afraid their ideas will look poor to others
(partly clear) (6) (medium) youth want good ideas from adults
(easy) (9) (clear) youth used to letting adults tell them what to do
No Criticism of Ideas Between the Group and Me
Open and Active Criticism of Ideas Between the Group and Me
(partly clear) (7) (easy) adult wants youth to question and criticize
(medium) (8) (partly clear) Youth afraid to criticize adult openly
(partly clear) (4) (medium) adult actively asks for youth reactions
(hard) (5) (partly clear) adult frequently judgmental in his criticism
(hard) (1) (partly clear) youth have norm of not talking with adults
(medium) (2) (unclear) peer leaders support norm of not talking with adults

Now Mr. Smith had a picture of what he thought was going on in his problem situation. The most important thing that stood out to him was that he was not very clear about some of the forces which he guessed were important. He went back to the youth to get more information about forces that were not clear. He got this information both through discussions and by using questionnaires. The force which he had ranked as most important seemed so complex to him that he wrote out a force field diagram about it!

This helped him identify further forces and questions he needed to discuss with the youth. Mr. Smith also began to consider ways he could alter some of the forces. He put some of these alternatives into action. His efforts to get information from the youth so as to diagnose what the force fields were, turned out to be an action plan in itself which proved helpful. Mr. Smith found the group changing in the direction of his goal.

At the end of several weeks, Mr. Smith found it helpful to look back over his efforts. He could note the changes which had occurred in his force field over time. He knew that his current force field diagram was much more accurate than his first attempts had been. It was based on careful data gathering. He had gathered some kinds of data several times so that he could see evaluatively how some of the forces had changed in response to the action efforts which he and the youth had worked out. Most exciting to Mr. Smith was his discovery that he could share the force field technique with the youth. Now they were working together on diagnosing goal situations, planning action for the group, and evaluating the reasons for success and failure.

SUMMARY

A person applying the force field technique in diagnosing a problem and/or deriving the most appropriate solution will have completed the following process steps:

1 - Identified a problem/goal

2 - Communicated a problem applying all criteria

3 - Listed forces for and against in proper form

4 - Rated forces in numerical scales

5 - Ranked forces in numerical scales

6 - Gathered data about problem

7 - Evaluated data and derived other forces, etc.

8 - Derived and stated appropriate solution strategy

9 - Evaluated solution effectiveness

SUMMARY FOR CRITERIA FOR RANKING AND RATING

Rating:

A. Strength is defined as resistance to change. How strong is a force in changing a situation. is it hard, medium, easy?

B. Clarity refers to validity. What evidence is there that it is a force?

Ranking:

Potency refers to the degree of influence the force has in weighing. How important is it? How would you rank it?

ADDENDUM B

Future Problem Solving Practice

Paul Torrance

* * * 2076 * * * Tricentennial * * * 2076 * * * Tricentennial * * * 2076 * * *

FUTURE PROBLEM SOLVING PRACTICE

by

E. Paul Torrance

Name:________________________ Date:________________

School:______________________ Grade:_______________

What will life in the United States be like in 2076? What ideas do you have for making life more fun than it is now?

Brainstorm as many ideas as you can. Write down your ideas and call them out to the rest of your team. Don't copy their ideas but you can hitchhike on their ideas.

Practice Brainstorming Rule 1: CRITICISM IS RULED OUT!

1.______________________________

2.______________________________

3.______________________________

4.______________________________

5.______________________________

6.______________________________

7.______________________________

8.______________________________

9.______________________________

10.______________________________

11.______________________________

12.______________________________

13.______________________________

14.______________________________

15.______________________________

16.______________________________

17.______________________________

18.______________________________

19.______________________________

20.______________________________

21.______________________________

22.______________________________

23.______________________________

If you have any more ideas add them on the back.

* * * 2076 * * * Tricentennial * * * 2076 * * * Tricentennial * * * 2076 * * *

Now, let's practice Brainstorming Rule 2: "Free Wheeling" is welcomed:

Loosen up! The wilder the better! (Don't forget Rule # 1.)

This time, try to imagine what will make people laugh in 2076! What will be funny that isn't funny now?

Call your ideas out to the rest of your team and hitchhike on one another's ideas.

1. ____________________
2. ____________________
3. ____________________
4. ____________________
5. ____________________
6. ____________________
7. ____________________
8. ____________________
9. ____________________
10. ____________________
11. ____________________
12. ____________________
13. ____________________
14. ____________________
15. ____________________
16. ____________________
17. ____________________
18. ____________________
19. ____________________
20. ____________________
21. ____________________
22. ____________________
23. ____________________
24. ____________________
25. ____________________
26. ____________________
27. ____________________
28. ____________________
29. ____________________
30. ____________________

If you have any more ideas, write them on the back of this sheet.

Now let all of your ideas come out! Big ones. Little ones. Wild ones. Tame ones. Obvious ones. Strange ones. New ones. Old ones. Brainstorming Rule 3 is: QUANTITY IS WANTED. The more the better! (Don't forget the first two rules!)

What new sports and games will people play in 2076? What new games and sports would you like to see that we do not have now?

1. __________
2. __________
3. __________
4. __________
5. __________
6. __________
7. __________
8. __________
9. __________
10. __________
11. __________
12. __________
13. __________
14. __________
15. __________
16. __________
17. __________
18. __________
19. __________
20. __________
21 __________
22. __________
23. __________
24. __________
25. __________
26. __________
27. __________
28. __________
29. __________
30. __________

If you have any more ideas about sports and games of the future, write them on the back of this page.

Finally, let's add Brainstorming Rule 4 and practice it along with the first three rules. COMBINATION AND IMPROVEMENT ARE SOUGHT. Think of an idea and then combine it with someone else's idea. Think of an idea and then improve it one way -- and then another -- and then another.

What are some of the new kinds of work people will do in 2076? What are some occupations that will be common in 2076 that do not exist today?

1. ____________________
2. ____________________
3. ____________________
4. ____________________
5. ____________________
6. ____________________
7. ____________________
8. ____________________
9. ____________________
10. ____________________
11. ____________________
12. ____________________
13. ____________________
14. ____________________
15. ____________________
16. ____________________
17. ____________________
18. ____________________
19. ____________________
20. ____________________
21. ____________________
22. ____________________
23. ____________________
24. ____________________
25. ____________________
26. ____________________
27. ____________________
28. ____________________
29. ____________________
30. ____________________

If you have any more ideas about future occupations, write them on the back of this page.

Now, we are ready to go beyond brainstorming and use your new skill in solving a future problem.

What measures will the United States have to take to protect the environment? In many areas of the United States, pollution of the air and water has reached dangerous levels. Many forms of wild life are becoming extinct. Many natural resources such as oil, various minerals, etc. are becoming exhausted. Before 2076, something must be done or there will be no Tricentennial! Brainstorm as many possible solutions as you can think of. (Use all four brainstorming rules.)

1. ____________________
2. ____________________
3. ____________________
4. ____________________
5. ____________________
6. ____________________
7. ____________________
8. ____________________
9. ____________________
10. ____________________
11. ____________________
12. ____________________
13. ____________________
14. ____________________
15. ____________________
16. ____________________
17. ____________________
18. ____________________
19. ____________________
20. ____________________
21. ____________________
22. ____________________
23. ____________________
24. ____________________
25. ____________________
26. ____________________
27. ____________________
28. ____________________
29. ____________________
30. ____________________

If you have some more ideas, write them on the back of this page.

Now you have more ideas than you can use! Which are your best ideas? How can you tell? In the spaces below, list what you think are the best "yardsticks" (criteria) for evaluating your ideas. For this practice, think of at least three and not more than five. (Decide on this as a team.)

1. ______________________________
2. ______________________________
3. ______________________________
4. ______________________________
5. ______________________________

Now you are ready to use your "yardsticks" (criteria) to evaluate your solutions. Pick out some of your most promising ideas and list them in the spaces below. Write your criteria in the spaces at the top. Then take each of your criteria one at a time and rank each of your most promising ideas. (1 for best and 10 for lowest).

Solutions

1. ______________________________
2. ______________________________
3. ______________________________
4. ______________________________
5. ______________________________
6. ______________________________
7. ______________________________
8. ______________________________
9. ______________________________
10. ______________________________

What do you think is your best solution? Restate it below.

____

Can you improve it? Try to make your best solution better. Write your improved solution on the other side of this page.

ADDENDUM C

Sample Instructional Model

A New Look at Energy and It's Effect on Living Organisms

A MODEL FOR DEVELOPING LEADERS THROUGH FUTURE-AIMED INSTRUCTION

Instructional Module: A NEW LOOK AT ENERGY AND IT'S EFFECT ON LIVING ORGANISMS

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A NEW LOOK AT ENERGY AND ITS EFFECT ON LIVING ORGANISMS

INTRODUCTION

Presently, a number of exciting new energy research areas seem capable of providing humankind with many new insights regarding the future and its important link with the past. Our goal is to provide students with an operational framework for dealing with "search of the cutting edge". It is hoped that gifted students will enbellish these ideas and investigate many of these areas on an individual basis.

As a student grows in awareness to new potentials it is posited that he will be more sensitive and more involved with the world around him. To stimulate thinking in an analytical dimension may result in freeing oneself of prejudice, doubt and fear. This allows more opportunity to comprehend ideas, emotions and values which in turn leads to better communication, problem-solving and decision-making, all necessary characteristics of leadership and self actualization. This increased awareness and development of potentials will hopefully result in more clarity of perception and improved behavioral stability.

"Man's reach should exceed his grasp"

"I can be a child
I can be male or female
I can be black or brown or any color
I can be educated or not
Nothing can prevent me from reaching"

Opening

Samples & Wohlford
1975

GOAL: To explore energy potential and the powers of the universe.

CONCEPT STATEMENTS:

Plant Energy	A-1	Plants and humans create an energy field which can interact.
Pyramid Energy	B-1	A pyramid contains factors related to mathematics. physics, geology and astronomy.
	B-2	Pyramid energy is now an established scientific research area.
Color Energy	C-1	There are in man many strange and inexplicable mysteries regarding color.

BEHAVIORAL OUTCOMES: (student behavior)		Students will:
	A-1	Develop the capacity to examine and evaluate the power of plants based upon actual experiments and predictions.
	B-1	Devise and record scientific experiments to determine if energy resides in pyramids.
	B-2	Compare observations and evaluate the validity of the energy force they are testing.
	C-1	Investigate the realm of color and determine whether it has behavioral effects on man.

ELEMENTS: All the elements of leadership and futurism are applicable in this unit. The specific elements for each activity are identified after each activity topic.

Section A - Plant Energy

Teacher Background

Resource Book - The Secret Life of Plants
Tompkins & Bird
Avon, 1974

Presently, much study and research is being done with plants. Research and tests are available which show that plants do create an energy field, and possess even greater powers in the field of parapsychology.

The examination of plants has played an integral role in the investigation of unknown energies and studies are available which examine the emotional and mental capabilities of plants.

Through the research done by Clive Backster, Dr. Marcel Vogel, and others, it has been discovered that plants demonstrate an emotional response similar to that in humans. Vogel contends that man can and does communicate with plant life. Plants are living objects, sensitive, and rooted in space. His research shows that they can be extremely sensitive instruments for measuring man's emotions and they also radiate energy which is beneficial to man.

These activities are intended to acquaint students with some of these findings and offer them the opportunity to examine through experimentation the validity of these concepts.

ACTIVITY # 1 - Measurement of emotional reactions of plants.

ELEMENTS

Anticipating

Creative
Problem
Seeking

Materials - Several houseplants, possibly of Philodendron variety, Galvanometer or lie-detector device (polygraph).

Time - This activity quite possible could be accomplished in 40-50 minutes or could extend over a longer period of time depending on how far the teacher wished to pursue the activity and how long the polograph is available.

Procedure - The polygraph device would be attached to the plants and the teacher or students would in turn threaten the plant with some real danger such as fire or the cutting of a leaf. The graph would be examined to see if there was any evidence of an emotional reaction.

Evaluation - Fill out the evaluation sheet at the end of the prescribed time and answer the following questions.

1. If all plants did not react in exactly the same way, what possibilities could account for this?

ACTIVITY # 1 Continued

ELEMENTS

2. If findings prove that plants are capable of reading minds, devise one possible manner in which this could be used to man's advantage for the future - use a brainstorming procedure (refer to instructions in the foundational unit).

Variations: If the teacher wishes to set up long term experiments he/she may wish to investigate the February and June, 1971 issues of Popular Electronics.

ACTIVITY # 2 Measurement of emotional reaction of plants through the power of psychic energy.

Creative Problem Seeking

Creative Production

Self & Social Action

Materials - Two or three large leaves from the same plant, plate, water. The above needed for each experiment. The teacher may wish to conduct experiments on an individual basis or small groups.

Time - A few minutes set aside each day over an extended period of time depending upon the successfulness of the experiment.

Procedure - Place the leaves on a plate with a small amount of water. Students are to choose one leaf on which they wish to concentrate their efforts. Each day they will think about the leaf in loving terms and concentrate on willing this leaf to live. The other leaf they will totally ignore.

Evaluation - A log sheet will be filled out at the end of the prescribed time. The log sheet is attached to unit. See page 24

1. What could effect the difference in the rate of dying in the plant leaves?

ACTIVITY # 3 Determining how human voice vibrations effect plant growth.

Self Actualization

Creative Thinking

Values Assessment

Materials - Various house plants, preferably types that are fast-growing such as Ivy, Wandering Jew.

Time - Allow at least 10 minutes per day for at least one month.

ACTIVITY # 3 Continued **ELEMENTS**

Procedure - Set up two control groups of plants in the classroom. Make sure all variables such as soil, water, light etc. are consistent. Students will spend an alloted amount of time per day with one control group. Activities such as talking, touching, and singing will take place with the one control group, whereas the other control group will be ignored.

Evaluation - Fill out the evaluation sheet at the end of the prescribed time and answer the following questions:

1. Carefully examine plants of the two control groups. Did you find any differences? Please write them down.
2. If voice vibrations do have an effect on plant growth, how could this be utilized in more productive crops?

ACTIVITY # 4 Determining whether or not harmonic sound waves effect plant growth.

Creative
Problem
Seeking

Problem
Sensitivity

Materials - Several plants preferably of different sizes and species, a tape of classical music and a tape of hard-rock music.

Time - Thirty minutes of music per day over an extended period of time. Facilities will determine the number of control groups.

Procedure - Set up control groups of several plants per group. Expose each control group to only one type of music. Studies indicate that music will have an effect only when it is very close to plants. Therefore, it is possible to keep two or more control groups within one classroom at opposite ends of the room. Keep variable the same. If more then two control groups are set up in the classroom other types of music such as jazz and country could also be used.

Observations will be made as to see whether vibrations of sound energy can exert a beneficial influence on horticulture. Accurate records will be kept that will include plant growth, leaf formation, height, root growth, and the amount of water used.

ACTIVITY # 4 Continued

ELEMENTS

Evaluation - Fill out the evaluation sheet at the end of each experiment.

1. What effect do your observations show that high pitched sounds and high frequencies have on plants?

2. Which type of music did your plants prefer?

3. What is your hypotheses concerning your observations?

ACTIVITY # 5 The effect pyramids can have on plant growth. Further information can be obtained from Pyramid Energy Book, Serge V. King Warner Books, 1977. This activity is similar to Activity # 2 Section B. The teacher may choose to use only one of the activities or both.

Creative Problem Seeking

Problem Sensitivity

Materials - Glass or plastic pyramids depending on the number of experiments you wish to do. Either seeds or small plants such as sunflowers, tomatoes and the necessary containers.

Time - This experiment can extend over several days to several months. The longer period of time the more conclusive the results.

Procedure - This activity will determine whether or not seeds germinate at a faster rate when placed under a pyramid. By placing plants both inside and outside of the pyramid students will observe, collect data and evaluate the results. Make sure that containers hold the same amount of soil, water in equal amounts, and plant the same number and type of seeds. If small plants are used, students should observe the movement pattern. It is suggested that plants growing inside pyramids will show evidence of a gyration motion whereas those growing outside do not.

Evaluation - Evaluate record keeping chart at end of activity and fill out the evaluation form.

1. Do your observations lead you to believe that the energy force within the pyramid was having an effect? Why?

ACTIVITY # 5 Continued

ELEMENTS

Variations - 1. Grow tomato plants in the pyramid and outside the pyramid for 2 weeks and then place in large containers. Note any difference in the production of tomatoes.

2. Observe the difference in plant growth if watered with "purified" water. (Water that has been set under a pyramid for at least 30 minutes.)

3. Grow plants under more shapes. Pyramid, 3 sides and 4 sided, cones, rectangles, etc. Careful data sheet kept as to the growth.

4. Time lapse photography.

ACTIVITY # 6 Studies show that plant growth can be influenced.

Creative
Problem
Seeking

Creative
Production

Materials - Six volt battery, copper wire, seeds, soil.

Time - Several days to several months.

Procedure - Students are to devise their own system to electrify containers planted with seeds such as radish or carrots. Plant the seeds in two tin containers keeping variables consistent. Students will electrify one container for 4-5 hours per day. At the end of a week compare the growth results of the two control groups, also observe the weight and the rate of production.

Evaluation - Fill out evaluation form and answer the questions.

1. Did the electrified seeds respond better than the control group seeds.

2. Would electricity be the only factor that could account for difference in production? Why?

Related Areas - Use of electricity in the raising of strawberries and oranges. (Secret Life of Plants pp. 123-214). Secret Life of Plants
Tompkins & Bird
Avon Books 1974

Section B - Pyramid Energy

ELEMENTS

ACTIVITY # 1 Construct a pyramid

Materials - Posterboard or construction paper, ruler, pencils, scissors.

Time - 20 minutes

Note - Exact measurements are not critical. Research has stated that as long as the finished product resembles a pyramid, the energy generation is present.

Procedure - Draw a base line approximately 9 3/8 inches long. Mark the middle (4-11/16). Draw a line upward from this center mark at least 8 inches long. Now measure a line from one end of the base line so that it meets the center line at 8-7/8 inch. Do the same from the other end so that the shorter sides are touching. Tape the edges together. Stand the pyramid up with the tape on the inside and then tape the last triangle together. You have just constructed a six inch high Cheops model pyramid!

ACTIVITY # 2 What effect does a pyramid have on plants? Set up an experiment to test the theory that pyramids stimulate seed germination.

Creative
Problem
Seeking

Materials - Radish seeds, pyramids, flats or two containers for potting soil.

Time - 3-7 days or longer

Procedure - Use half the seeds as experimental group and the other half as control seeds. Prepare enough soil to fill both containers equally. Place the containers as far apart as possible but try to maintain the same amount of sun, air, etc. Have each facing the same direction. Place a pyramid over one of the containers, and then plant an equal number of seeds in each container. Be sure you measure out equal portions of water. Record daily findings. Which plants break through the soil first?

Variations -

1. Have students record other variables that might effect the experiment (climate, temperature, etc.)
2. Have students devise other methods for similar experiments.
    - a) "Pre-treat the test seeds under the pyramid for 24 hours. Then plant.

b) "Pre-treat" the water with pyramid energy. Use normal water on the control seeds.

c) Do some type of seeds respond better than other types of seeds?

d) Do some types of pyramids perform more effectively then others?

Questions:

1. What is your evaluation of the results? (What do you think was responsible for these results?
2. List the similarities and differences between the two groups. Examine the list and explain any effects these might have had on the results.

ACTIVITY # 3 Test the hypothesis that a pyramid will preserve cut flowers.

Problem Sensitivity

Creative Problem Seeking

Materials - Cut flowers, pyramids, water and vase.

Time - One week

Procedure - Use an experimental control group having equal numbers of cut flowers. Place each group into identical vases or containers. Treat the test experimental group with a pyramid for a short period each day. Record your findings noting any changes or differences in the color, fragrance, texture of the flowers, or the color or odor of the water.

Variations -

1. Treat only the water of the test flowers leaving the water for the control group normal.
2. Experiment with several different types of pyramids placed in different locations to the flowers (above, below, etc.)

Questions -

1. What could be responsible for the results shown? Test the hypothesis.
2. Devise your own experiment to either prove or disprove the hypothesis.

ACTIVITY # 4 What happens to food when placed under a pyramid?

ELEMENTS

Problem Solving

Originality

Materials - Apple wedges, pyramids

Time - 3 days

Procedure - Place experimental apple wedges at various locations under the pyramid. Allow control group wedges to be left out during the testing period. Observe and record the size, color, weight loss, and taste at the end of the testing period.

Variations -

1. Test different types of fruit.
2. Experiment with ripening abilities on hard or undeveloped fruits (banana, peach, pear, etc.)
3. Try experiments with other types of food (milk, eggs, meat)

ACTIVITY # 5 Does the pyramid really sharpen razor blades?

Creative Problem Seeking

Flexibility

Materials - Razor blades, pyramids, (scissors, X-acto knives , etc.)

Time - 1-3 weeks

Procedure - Place one new blade under the pyramid about one-third of the distance up the center (setting on the cover of can works well). Use a new blade of the same brand for the control group.. Each day cut through a specified amount of cardboard with each blade. Each time replace the test blade under the pyramid after use. Continue the experiment for a given amount of time and record your findings related to effeciency of the blades.

Variations -

1. Check out other material that might be effected by pyramids.
    - a) batteries
    - b) magnets
    - c) mechanical appliances
    - d) motors

Section C - Color Energy

There is much in the world coming to the attention of humankind for which experts do not have explanations. It is fast being realized that our minds and bodies have abilities of which we are not aware. This following section was meant to provide experiments to help future leaders of tomorrow delve into an area that presently has few accepted explanations. Each activity calls for a use of the mind. In research laboratories these activities have been repeated many times. Sometimes the experiment works and sometimes it doesn't. Researchers do not always understand the necessary ingredients and circumstances that cause these occurences.

This truly is a future-oriented frontier, waiting for further research and complete answers which can be validated to the satisfaction of all.

ACTIVITY # 1 Colors

ELEMENTS

Anticipating

Values Assessment

Self Awareness

Originality

Materials - Paper and pencil

Time - One week

Organization - Student observes himself and two others and record observations.

Man has always been intrigued by color for many reasons. Colors are felt to have certain qualities and effects on living organisms. Research has shown that color has a definite relation to good production, harmony and safety. It effects moods and body postures. Medical science has proven that different colors have definite and varied effects on our nervous systems and that they act upon us quite independently of our eyes and minds.

(Read information on colors in Appendix B.) Notice the qualities of different colors. (Information obtained from Color Psychology and Color Therapy, and The Finding of the Third Eye both listed in the Bibliography.)

For a week, keep a record of the colors of clothing you and two other people wear. Record your general mood for each day. For the two people you observe, record what you perceive their general moods to be.

Develop your own form for recording the data. At the beginning of the week state your anticipated results. At the end of the week compare recorded information to the information in Appendix B. When you wore blue did you feel calm and relaxed? After the experiment is finished and the results compared, state your feelings. Did you find what you anticipated?

Questions - How did your results compare with what you expected on the color sheet information?

Do colors seem to effect people?

What qualities seem to go with each color?

ACTIVITY # 1 Continued

ELEMENTS

Variations -

1. Grow plants under different colored light bulbs.
2. Grow plants under glass of different colors.
3. Compare color vibrations to other vibrations, (i.e. water & sound). How many of the color vibrations do we actually see? Hear?
4. Stare at pieces of colored paper then glance away. Our eyes become saturated with one color, we should see another color very strongly.
5. Study people's favorite colors and compare with personality types.
6. Use pseudo-chromatic plates used for testing color blindness.
7. Study the role color has played in various religions and cultures.
8. Place large sheets of colored paper on the wall. Have students sit in front of bed sheets. With outstretched arms place fingertips on the sheets. Eyes should be closed.
9. Research has shown arms will tend to slightly deviate away from each other under the influence of a warm color and toward each other under the influence of a cool color.

ACTIVITY # 2 Energy Fields

Creative Thinking

Self Awareness

Investigative Processes

Materials - Light or dark walls.

Time - 10 minutes

Organization- One person is needed to be the model. Have that person stand against the wall, but not touch it.

Researchers feel there is an energy field around every particle, including the body. Some people have argued that a person with special talents was needed to see this energy field. Methods have been developed to allow everyone who wishes, to see the field. Practice may be needed. How much depends on the individual.

One person needs to be the model. The model should stand against a very light or very dark background. Observers should sit or stand a few feet away to one side. Look at the point where the neck meets the shoulders or a few inches above the head. Let the eyes go a little out of focus.

A soft glow should be visible. With practice many have been able to see colors in this energy field.

Questions - Did you notice the energy field on the first try or did it take many attempts?

Describe what you saw?

Did you notice colors?

Does it appear the same around everyone?

Variations - It is felt that all objects are surrounded by an energy field. Try to observe these fields. Use the same method from the experiment.

Study the color sheet attached and try to see colors in the energy field.

Investigate energy fields and vibrations.

Read the book "Life After Life", by Raymond Moody

APPENDIX A

Pre-Test and Post-Test

Instructions: Mark each item with a 1, 2, 3, or 4 according to your agreement or disagreement with the statement. (See key)

SCORING KEY
1 - Strongly Agree
2 - Agree
3 - Disagree
4 - Strongly Disagree

_____ 1. Colored lights effect the growth of plants.

_____ 2. Colors have little effect on people's moods.

_____ 3. Everything has an energy field.

_____ 4. Man has no control over his body.

_____ 5. What we see, hear, touch, smell or taste is all that exists in the universe.

_____ 6. Evidence is available which shows that plants are capable of emotions.

_____ 7. Plants are an underdeveloped source of energy.

_____ 8. The primary function of the pyramids was to serve as a tomb for the Egyptian kings.

_____ 9. Different colors effect people in similar ways.

_____10. The energy field around objects or organisms is visible to the human eye.

Answer the following questions:

11. Name five different areas in which plants are beneficial to man____________
____
____
____
____

12. List three new ways in which plants may be beneficial to man in the future.
____
____
____

13. List three characteristics of a pyramid.____________________________
____
____

14. What are the important elements of a scientific experiment?____________
____
____

15. What things would influence your proof or conclusion in a scientific experiment?
____
____

16. What are your feelings about accepting ideas that are as yet unverified?

17. Do you support the idea that there are untapped energy sources available in the universe?

18. List 10 uses for a pyramid.

19. Name three possible methods that may be used in the future to increase plant production.

SUGGESTED FOR POST TEST USE ONLY

20. What other things in nature or things not yet studied might have similar results?

21. What steps do you feel ought to be taken in order to verify or discount these types of "energies"?

22. What practical uses do you foresee for any of these energies if they were developed further?

ANSWERS TO PRE-TEST AND POST-TEST

1. 1 or 2
2. 3 or 4
3. 1 or 2
4. 3 or 4
5. 3 or 4
6. 1 or 2
7. 1 or 2
8. 3 or 4
9. 1 or 2
10. 1 or 2
11. short answer questions have many acceptable answers. Here are a few. Color-calming effect of man, medicinal, photo-synethesis, food, beauty-asthetic, erosion resistance.
12. self analysis, mind-transfer, healing
13. shape, direction, chambers, inside structure.
14. statement of problem, hypothesis, testing, control, variables, evaluation.
15. value systems, methods of data gathering, anticipating results, experience of data gathering.
16. answer would depend on personal beliefs.
17. answer would depend on personal beliefs.
18. sharpen razor, preserve food, encourage plant growth, encourage seed germination, purification of water, ripening of fruit, food storage, mental or psychic energy, re-energizing batteries, dwelling structures.
19. music, light, energy (pyramid), colors.
20. music, colored lights, energy to increase growth of plants. Drugs, mental control, telekinesis, telepathy, bio-feedback used to control body states. cloning for controlled reproduction.
21. governmental research, world-wide organization for data gathering and evaluation with regular reporting systems for public use.
22. plants and pyramids as source of energy, mind controlled health, awareness of total potential and self-actualization, world peace.

APPENDIX B

COLORS

Red

Red has the lowest vibration, being therefore the coarsest and most physically vitalizing; its place on the scale is just above the heat vibrations, and it is heatgiving in itself. As the vibrations increase in speed up the scale we come to orange, then to yellow, then to green, blue, indigo and violet, the violet leading us on up into the extraordinarily penetrating and rapid vibrations of ultra-violet ray.

Astrologers tell us that the "planetary color" of Mars is red, and that Mars "rules" or has dynamic power over iron.

Proceeding with our investigations we find that red is the chief spectroscopic color in any herbs or medicines, having a heating and stimulating effect, such a cayenne, cloves, or musk.

Red is the lowest of the seven of the color scale, and it belongs to the lowest of the seven notes of the musical scale, which is C.

Red, when predominating in herbs, colored lights or glass, and surroundings, gives warmth, increased circulation, vitality and energy to the body, and also provides cheerfulness, stimulation and excitement.

Red is perhaps the most dominant and dynamic of colors. Its energy has a strong influence on the growth of plants. It has been found to accelerate the development of certain lower animals, to increase hormonal activity, and to heal wounds.

In its action upon the human organism, red tends to distract the equilibrium of the body. It has been prescribed to treat sunburn, inflammation, rheumatism. It will act to raise blood pressure and pulse rate but may be followed by a reversal of these effects after a period of time.

Psychologically, red is exciting and increases restlessness and nervious tension. It represents an attraction to stimulus and as such provides an excellent environment for the creation (but not execution) of ideas. Under the influence of red, time is overestimated and weights seem heavier.

Under practical situations, pure red can seldom be used; the full hue is too imperious and has too strong an afterimage. Brilliant red has its value in commanding human attention, although a high frequency of color blindness among men introduces limitations. Modified forms of red, rose, maroon, and pink are beautiful and expressive, universally appealing, and deeply emotional. Variations of red are preferred by extroverts; therefore the color has a place in psychotherapy to bolster human moods and counteract melancholia. It helps to distract attention from within and to direct it outward.

Orange

The second color in the spectrum is orange. This beautiful color is associated with the Sun, and has also a warming and invigorating effect. But whereas red is stimulating to the body and blood, orange is stimulating to the emotions. It should be avoided by extremely emotional types, who should acquire balance through its complementary color blue. Its note is D in the musical scale. Melodies in that key have a strong emotional appeal. The metal belonging to the Sun is gold, from which the alchemists believed they could obtain the Elixir of Life which rendered man immortal.

Orange partakes of the same qualities as red. It is not generally preferred in its pure form but is highly pleasing in its tints (peach, salmon) and shades (brown). For the most part tints of orange (peach) are ideal for the interiors of hospitals, homes, factories, or schools. The color is mellow, less primitive than red, and it therefore has a more "livable" charm. It has appetite appeal and is quite suitable for food service. Where it may be reflected upon human skin, it casts a cheerful and flattering glow.

Yellow

The third color in the spectrum is yellow. We are told that this color belongs to the planet Mercury. Mercury confers a quick intellect by stimulating the nervous system. To be quick-witted the nerves should be in an active condition throughout the body; so nothing can become stagnant under the beneficial influence of this planet.

Yellow electric lamps or glass windows stimulate the nerves of the brain and the body and cure a stagnant condition of the internal organs. They should not be used for highly nervous subjects.

We find that yellow predominates spectroscopically in all which are purgatives or nerve-stimulants, as senna, sulphur, fig juice, tartar, phosphorus and castor oil. An extreme amount of yellow has diastrously over-stimulating effects upon the nerves, causing death, as with prussic acid and strychnine, which are very yellow.

Yellow corresponds to the musical note of E. Its jewel is the topaz, and represents luminisity.

Yellow has been said to have a favorable effect upon the human metabolism. In many studies of the biological action of light, however, it is generally found to be neutral. Because of the high visibility of yellow, it serves many purposes in safety. The hue is cheerful and incandescent in appearance.

In color conditioning, yellow will tend to appear brighter than white. It thus is useful in meeting unfavorable conditions of dim illumination or large, vaulty spaces.

Green

Our fourth color is green, standing in the center of the scale of seven. It is the meeting-ground between the thermal or heating and expanding colors of red, orange and yellow, and the electrical, contracting, cooling colors of blue, indigo and violet. Green gives stability, endurance and quietude. We are allowed much of it to look at in nature and partake of as nourishment. Its action is to cool the blood and animate the nerves. It belongs to the planet Saturn, whose metal is lead.

Green belongs to the fourth note of the musical scale F, whose melodies, usually in a minor key, sing of the melancholy always associated with Saturn. Its stone is the emerald, which always bestows peace of mind. Therefore, whether through lights, colored glass or herbs, green gives an all-round steadying and quietening influence.

Yellow-green is generally neutral from the biological standpoint. Greens and blue-greens, however, are pacific and tend to reduce nervous and muscular tension. Psychologically, green represents a withdrawal from stimulus. It provides an ideal environment for sedentary tasks and concentration.

Bluish greens lack a primitive quality and are both pleasing and "livable". The same virtues have been expressed for peach, and indeed the two hues beautifully enhance each other. Because blue-green is complementary to the tint of average human complexion, it provides a very flattering background.

Blue

Blue belongs to the planet Venus, the giver of love, devotion and harmony. Its stone is the amethyst, the super-sacred of the seven sacred jewels. One can either be "true blue" or have a fit of the "blues", according to one's outlook!

The musical note is G, a favorite key for the composers of romantic music.

Blue has qualities that are antithetical to red. It seems to retard the growth of plants, to decrease hormonal activity, and to inhibit the healing of wounds. In its action upon the human organism it lowers blood pressure and pulse rate, though this effect may later be reversed.

Under the influence of blue, time is underestimated and weights are judged as being lighter. Because the color has a naturally low saturation it may be used in almost any form - light, dark, pure, grayish. Being visually primary, however, it tends to be bleak if applied in too large an area. While blues are suitable for homes, they have not proven very successful in offices, industries, schools, and hospitals, except as incidental areas and then in medium or deep tints. Pale blue seems to bother human eyes and to give a blurred appearance to adjacent objects.

Because blue is a difficult color to focus, it is objectionable as a light source and low in attention-value. Yet blue is associated with dim light, is restful and sedate, and is an outstanding favorite throughout the world.

Indigo

Indigo is the sixth of the color scale. It is like green, a meeting-ground for all the colors. Its action through herbs and chemicals is intermediately between blue and violet, soothing both nerves and blood. Its planet is said to be Uranus and its stone is jet.

Violet

Violet is the seventh and last of the color octave. It represents the seventh and highest color man can see. It has always been connected with the priestly ceremonies. Its musical note is B, in which key much sacred music is written. Its planet is Jupiter, ruling the metal tin and the jewel sapphire. In its medical action it approaches the realm of the violet-ray. It cools the nerves, is magnetic and antiseptic.

Violet being the blend of red and blue, the two extremes of the spectrum, is more or less neutral biologically. It is not suitable for large areas because it disturbes the focus of the eye. Of all hues, it seems to be the one dominantly esthetic in its appeal.

White - Black - Gray

White is the perfectly balanced color, clear and natural in its influence.
It reflects back all the rays and therefore is cooling and restful.
Black absorbs all the rays and is therefore warm.
Gray is passive. It is useful as a background to other colors.

All three are found to be emotionally neutral and fail to have much psychotherapeutic application except where negation may be the particular expression desired.

The above information was directly quoted from:

Alder, Vera Stanley, The Finding of the Third Eye, Samuel Weiser, Inc., New York, N.Y. 1968.

Birren, Faber, Color Psychology and Color Therapy, University Books, Inc. New Hyde Park, New York, 1961.

These books are suggested for further reading for teacher background.

APPENDIX C

LOG

Observation record

1. Name of participants:

2. Name of Activity/Experiment:

3. Summary of process followed:

4. Time spent on activity:

5. Summary of results or outcomes:

6. Feeling regarding activity:

7. Comments:

Questions from each activity should also be answered on this sheet.

APPENDIX D

A New Look at Energy and its Effects on Living Organisms

Bibliography

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